THE BUILDER

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ILLUSTRATIONS.

BUCKINGHAM PALACE. DESIGN FOR NEW FAÇADE.
SIR ASTON WEBB, C.B., R.A., ARCHITECT.
NEW CONGREGATIONAL CHURCH, FAIRHAVEN.
MESSRS. BRIGGS, WOLSTENHOLME, & THORNELY, FF.R.I.B.A., ARCHITECTS.
PREMISES OF THE ORCHESTRAL ASSOCIATION, ARCHER-STREET.
MESSRS. H. PERCY ADAMS & C. H. HOLDEN, ARCHITECTS.

ILLUSTRATIONS IN TEXT.

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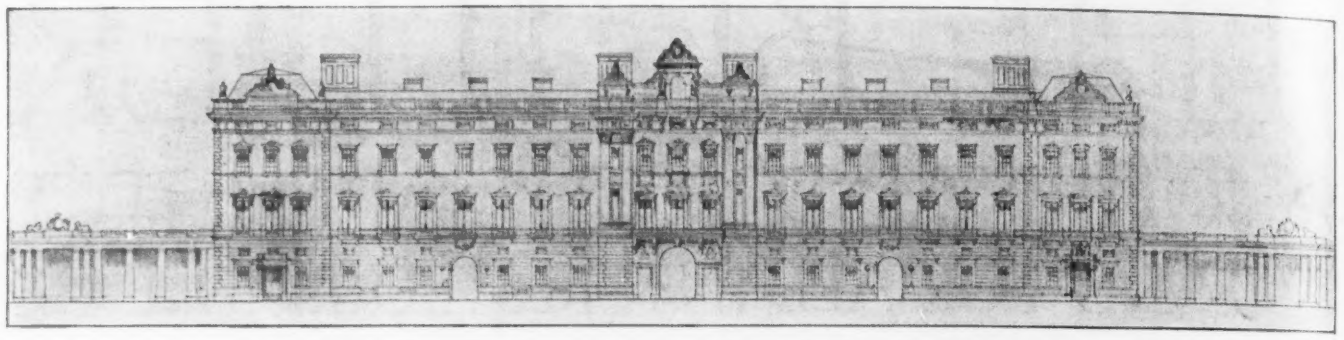
IS THERE A "NEW SPIRIT" IN ARCHITECTURE?

WE hesitated somewhat before asking ourselves the question which we have put at the head of this article. It carries with it something of the flavour of what is called in journalism the Yellow Press, an element of sensationalism with which we have no sympathy. Some years ago Mr. Havelock Ellis wrote a series of essays under the title of "The New Spirit," in which he spoke of writers, so far as we remember, such as Tolstoy and Ibsen, whose works have passed already into the ranks of the classic. In all phases of art of the last fifty years—in philosophy, poetry, romantic literature, music, painting, and the decorative arts—there have been manifestations of what is called a "new spirit," usually typified in its highest and most comprehensible phase by some distinguished man of genius, such as those we have already named and others, such as Wagner, Manet, Rodin, Nietzsche, and William Morris. Architecture has largely escaped these movements of intellectual perturbation. Within the same period it has possessed, no doubt, men of as distinguished talent as have any of the other arts, but they have been less moved by the desires and aspirations of their time than the precursors whom we have named. Architecture has been more content, as it were, to revolve within its own orbit. For, although if we cannot quite point to movements within its sphere of the same importance and extent as have operated elsewhere—movements which have reflected the restless and investigating *Zeitgeist*—architecture has nevertheless not been unresponsive to a certain intellectual restlessness within its own doors. In the middle or so of last century, for instance, we had the historic battle of the styles, a conflict which now seems a little absurd, although precisely the same battle continues to-day, and will no doubt continue until the end of time, only the scene of action has changed. We have recently had the opportunity of making a rapid survey of the architecture of various countries. There remains in our memory, outstanding and formidable, an aspect of architecture which we did not set out to see, at which we scarcely indeed gave more than a passing glance, but which succeeded in making by the repetition of its effect a sort of cumulative impression which we find impossible to escape. We ask ourselves, "Is architecture coming at last under the influence of the *Zeitgeist?*" It would probably have been more frank to ask, "Is a new style becoming manifest in architecture?"

The question of a new style in architecture has occupied the thoughts of more than one generation of architects. It has been discussed in public before our learned societies; it has more often provided a matter of private preoccupation. But no solution has so far been discovered that could secure any sort of unanimous assent. The question of a new style, in fact, has usually resolved itself into some such issue as prevails in certain quarters at the present moment, such as whether we should follow the lines of the French Renaissance or late Georgian. To talk of creating a new style seemed like beating the air. Since the time of the Italian Renaissance—that is, since the art of architecture, emerging out of the period of the Middle Ages, became a self-conscious and



Buckingham Palace : The East Front towards the Mall as existing.

individualised art, instead of an art which represented the general consciousness of the community—it has become more and more a child of tradition and precedent, and therefore less responsive to the world movements which have affected and influenced the expression of the other arts. Apart from this, the conditions governing the practice of the art of architecture are of an extremely restricted and dominant character. The architect is, in fact, the only artist to whom it is forbidden to build castles in the air—that is to say, he cannot construct off-hand the edifices of his imagination as the poet or dramatist, the musician or painter can. All the elements of creative composition—rhythm, colour, proportion, symbolic intention, what you will—have to be arranged and wrought together, often under conditions which he cannot choose for himself, and in any case with a view to a material and practical application to which the other arts are strangers. That is not, however, to say the sister arts do not also possess definite limitations of expression, it is only to say that they are different in character and degree. The greater the limitations the greater the art, and in practice they have provided no barrier to the architect of true creative genius, whose works endure through the ages as an ornament to his own country and a centre of pilgrimage for the inhabitants of others. It is, however, probably true that this aspect of architecture has been largely responsible for its apparent irresponsiveness to tendencies and influences, often transitory, to phases of thought which from time to time swept over the world, and which have affected the other arts. The architect, working more or less in a sphere of artistic isolation, has been more content to follow in the lines laid down by one or other aspect of the tradition of his art: here at any rate he was on sure ground. In this connexion another point, which is a little paradoxical, suggests itself. We shall put it as briefly as possible, and it is this: That while works of architecture have not only provided the chief ornaments of their country and are among the most valuable documents of historical record which remain to us from the past, they have until recently found small recognition on the part of the historian (apart from the archæologist and virtuoso), and formed little or no part in the general teaching of the schools, not even, until recent times, in the art schools. If this has been so, small wonder that the general estimation in regard to architecture has been of an extremely limited and superficial character, that the gradations which distinguish the builder (we are using the term in its trade and no uncomplimentary sense) from the architect are lost on the man in the street. It is indeed a strange thing that, although architecture in the hierarchy of the arts occupies the most venerable and established position, it should have remained so long outside the appreciation and apprehension of the general mass of mankind. In Great Britain this has been peculiarly the case; the position of the architect has been usurped by the often more trivial and obvious appeal of the painter or the penman. But time this state of things has largely changed. On the Continent certainly, and to some extent in Great Britain, the young architect has found his training among his brother artists, the painter and the sculptor. And this sort of training which necessarily involves interchange of ideas has perhaps assisted each type of artist in a better understanding of each other's aim. There is nothing like a spirit of camaraderie among artists of various *métiers* for opening and refreshing the mind; frank discussion between artists in the making, and even between those of later life, the thrust and parry of ideas, helps to make the imagination more pliable, gives an impetus to creative power. That the public also are beginning to take a more intelligent interest in architecture is reflected in the Press. So that altogether the architect can no longer, even if he would, return to his position of intellectual detachment and isolation. There are also other forces at work; those we have indicated are largely on the surface. There are the requirements of modern planning, the exigencies of a commercial, scientific, and luxurious age, which have no counterpart in history; there is the introduction of new materials, new methods of construction, which cannot perhaps be consistently applied to any preceding style in architecture. And in saying this we are not speaking of the spirit or the æsthetic considerations which guided the formation of the great schools of the past, and which will no doubt always form the grammar and basis for the finest creative efforts; we are speaking merely of the adaptation or imitation of features, of the letter rather than the spirit, contained in the teaching of the older work.

It must not be thought from what we have just said that we are in sympathy with the kind of work which has occasioned our remarks. We are no iconoclasts; we are no strangers to the desire to preserve, if possible, a scholarly tradition in architecture. But no force of scholarly predilection can stop the tide of a universal tendency if it once begins to flow. It is, in any case, no good blinking facts. If we desire to change the current of the tide we must first of all realise its direction. In Milan, in Brussels, in Vienna, in Budapest, and to some extent in Paris, but more especially in Austria and Germany, we discovered the same indications of a revolutionary movement, expressed with an "insolence of animation" that no one can wholly disregard. The tendency is revolutionary because it aims at upsetting the standards of tradition, if not altogether its canons. It says in effect we must start afresh; we have to deal not with the problems of the past, but with the changed conditions of modern life. Much of this work is experimental, a groping in the dark; much of it is also, in our view, extremely repellent. It is no longer a matter of whirling lines, splashed with forms like the figures of musical notation, which we associate with the phase of art known as *l'art nouveau*—a phase which seems happily to have passed away. It is much more serious than that. It would be absurd, for instance, to compare its exponents to the *fauves* of the Independent school in Paris. No doubt it found its origin in Austria and Germany, and that among its earliest protagonists were men of the type of Alfred Messel and Otto Wagner—that is, architects of great scholarship and great creative gifts who departed from the schools of tradition probably for reasons which we have imperfectly attempted to summarise. It would be premature to say that we are on the eve of the birth of a new style; but there is certainly a great and universal movement in the air which may or may not be the operation of the time spirit, but which cannot be ignored.

BUCKINGHAM PALACE.

THE centralisation of power which in France enabled the monarchy to carry out colossal groups of State buildings like those of Fontainebleau, the Louvre, and Versailles ultimately produced the conditions which brought about the Revolution. In this country the only approach to schemes of like magnitude was Inigo Jones's projected Royal Palace, although there are many smaller royal residences of the Tudor period which are delightful in their architectural expression. What the Stuarts might have carried out in the way of monumental architecture had they retained

their power is difficult to conjecture, but our later monarchs have been content with residences of little grandeur or architectural distinction.

And of the royal residences none, with the exception of Balmoral, have less architectural pretensions than Buckingham Palace. The present buildings occupy the site of the Mulberry Gardens, a place of fashionable resort in the reigns of Charles I. and II. The ground was originally planted with mulberry-trees by order of James I., who hoped to introduce a silk industry, but the speculation proved a failure. Evelyn and Pepys both refer to the gardens, the former as "the best place about the towne for persons of quality," the latter as "a silly place with a wilderness somewhat pretty."

The public recreation grounds were subsequently done away with and a house built on the southern portion of the grounds by Lord Goring, and subsequently occupied by Speaker Lenthall during the Rebellion. The next owner was Lord Arlington, a member of the Cabal Ministry, who rebuilt the house after its total destruction by fire in 1674, and renamed it Arlington House. This, as shown in old illustrations, was a brick house with slightly projecting wings and a large domed lantern. The house was demolished in 1703, and the site purchased by John Sheffield, Duke of Buckingham, who built a more ambitious residence. This, as shown in old prints, was a square brick house, with projecting wings, in which were located the laundries, kitchens, and servants' quarters. It was described as "a graceful palace very commodiously situated at the westerly end of St. James' Park, having at one end a prospect of the Mall and other walks, and of a delightful and spacious canal; a seat not to be contemned by the greatest monarch."

Sheffield's only son dying in 1735, the line became extinct, and after the death of his widow, Catherine Darnley, who is referred to by Horace Walpole as "Princess Buckingham," the house was bought by George III. in the second year of his reign for 21,000*l.*, since which time it has been almost continuously used as a royal residence. In 1775 the property was settled on Queen Charlotte in exchange for Somerset House, and was known in West-end society as the "Queen's House." Here it was that the King surprised the great Dr. Johnson, who was allowed the use of the library, and who afterwards said to the King's librarian, "Sir, they may talk of the King as they will, but he is the finest gentleman I have ever seen."

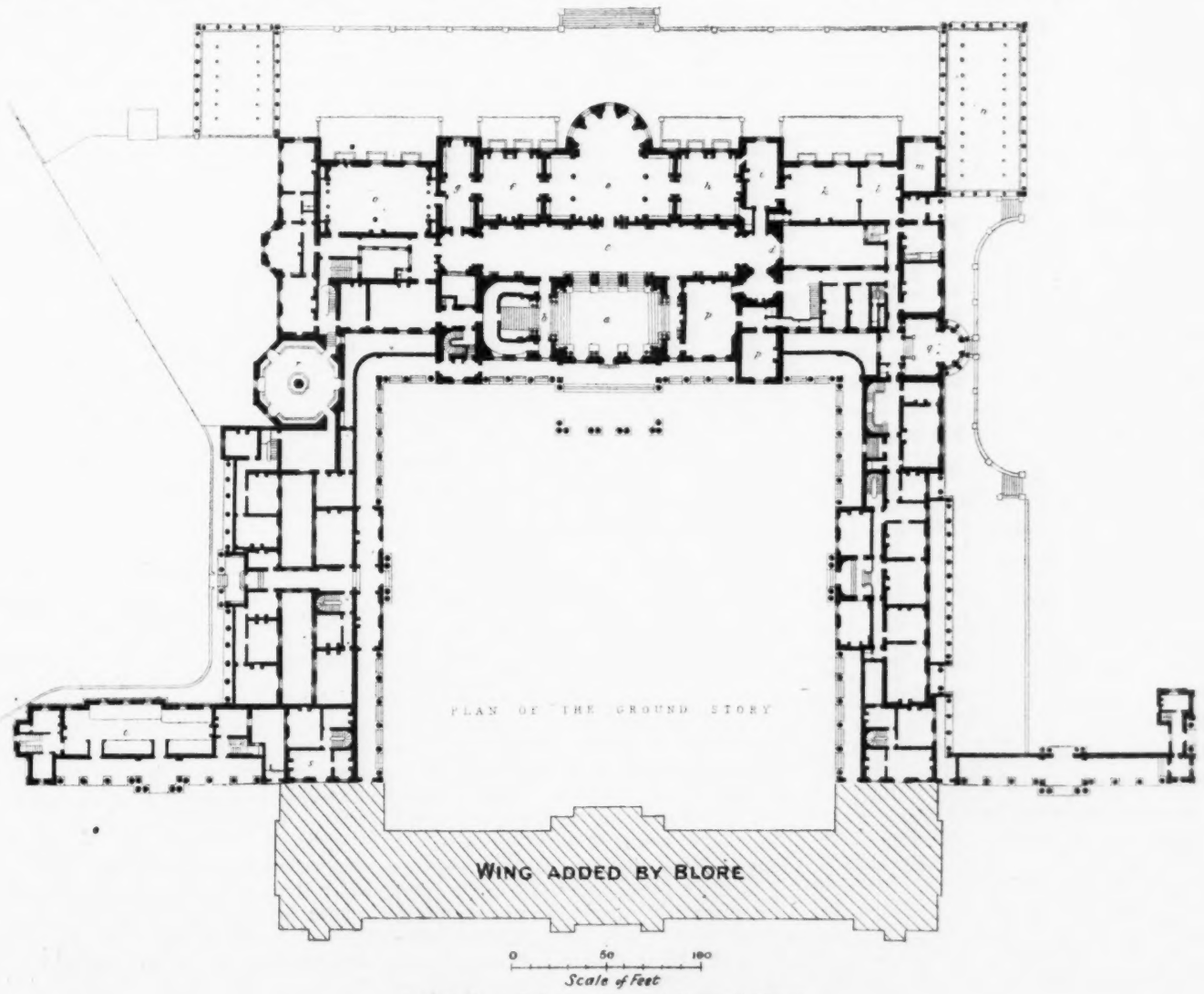
In 1825 the present building was commenced by order of George IV., from the designs of John Nash, but William IV. not liking the situation, the new buildings were not occupied till after Queen Victoria's accession. The original intention had only been to repair and enlarge the buildings then standing, the whole site, heights, and dimensions being adhered to, as it was considered that Parliament would not grant the funds for a new building.

This partially accounts for the shortcomings of Nash's design, a design unsparingly condemned by Leeds in his work on public buildings of London, for the "utter absence of dignity occasioned by the original idea and the pettiness which marks every individual feature." Leeds further quaintly adds that Nash "appears to have sat down at his drawing-board without any preparation or study further perhaps than his studies for Regent-street."

Nash's buildings are carried out in Bath stone, and, like much of the work of the late Georgian period, are uninspired but simple, refined, and not unpleasing, as can be gathered from the west or garden front, which we illustrate.

It is interesting to note that the Marble Arch originally stood in front of the central entrance, being removed to its present position in 1851.

The existing east front occupies the fourth side of Nash's quadrangle, and was added by Blore in the early years of the late Queen's reign at a cost of 150,000*l.*, and represents the nadir of the architectural cycle. It is carried out in Caen stone, a material which quickly decays, and the successive coats of paint with which it has been covered have given it the appearance of stucco, and still further emphasised the unsatisfactory nature of its design. This, which we illustrate on page 496, is now to be replaced by the new front designed by Sir Aston Webb, R.A.



Buckingham Palace: Plan of Ground Floor.

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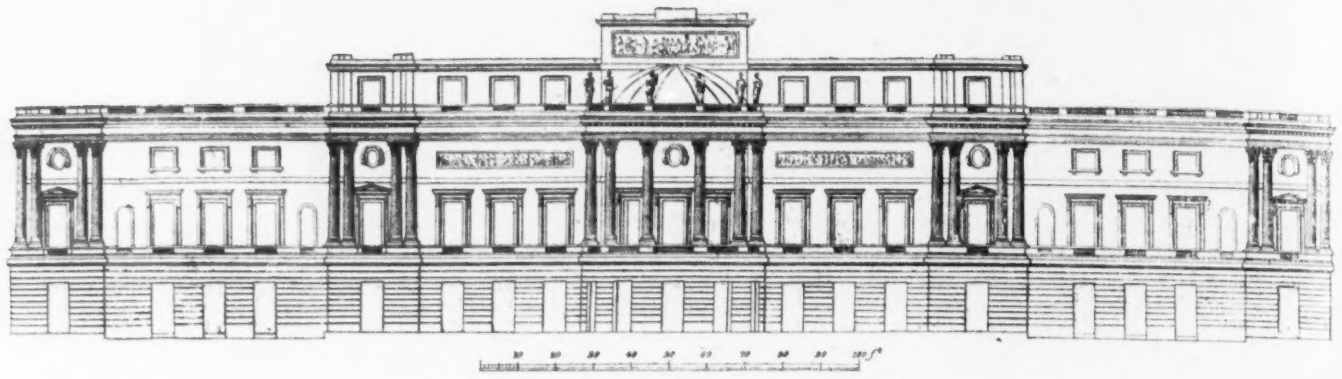

Buckingham Palace: West or Garden Front.

If we consider the general type and simplicity of Nash's design we think it appears obvious that any treatment except the very simplest and quietest would be out of place, and we feel that Sir Aston Webb has been wise in avoiding the temptation to create a *tour de force* by a design of great architectural pretensions to which the remainder of the Palace would be an anti-climax.

The difficult nature of the problem may be understood when it is considered that the height and levels of existing floors had to be adhered to as well as the present window and door openings, a condition which naturally affected the lines of the design. As we have previously stated, the remodelling of the façade is but a unit of the scheme for the improvement of the Mall and has been carefully considered in relation to the Queen's Memorial, to which it forms a background. In a letter to the *Times* Mr. Statham criticises the vertical note of the central feature as contrasting somewhat unfortunately with the lines of the Memorial, but we understand that the attic over the pediment masks two large ventilating shafts which are carried up at either side, as shown on the drawing, so that it is in fact but an ingenious way of masking a difficulty, and it must also be remembered that the building is a Royal Palace and not a background to a memorial only.

The new front will be carried out in Portland stone, one of the only stones which can be safely used in the London atmosphere.

Much as we may regret the fact that the royal residence in the capital of the Empire should be a building whose merits are of a negative character at the best, we do not agree with those who think that all could be put right by adding a magnificent front to the existing buildings. The choice seems to us to really lie between building a new palace on ample and dignified lines and, failing this, to take some such course as Sir Aston Webb has followed.

We may dream dreams and see visions, but unfortunately we cannot translate them into stone without cost, and we are not prepared to commit ourselves to the opinion that in the present state of the national finances it would be wise to undertake the erection of an entirely new palace.

We as architects sometimes fail to recognise that we hold but one position in the body politic, and that there are many other points of view to be considered. In doing so we prove ourselves unpractical advisers, and lessen our influence with the public.

NOTES.

A Committee of Public Art.

THE present time seems opportune—perhaps it is always opportune—for again calling public attention to the proposition for a consultative and advisory committee for the metropolis as one method of ensuring, so far as it is possible, the obtaining of the best artistic and expert criticism and suggestion on all schemes for great public and representative buildings and town planning. Our reason for doing so has no direct reference to any scheme at present on the boards, whether for great building, street, bridge, or city. It is rather that we are fain to believe that there are signs in the public Press and elsewhere of a revival of public consciousness and interest in such matters—the result possibly of the new town-planning movement. In the interest of our art, and of the public good, such incipient tendencies need to be encouraged and fostered in every way. The proposition in no way throws a stigma upon any public official, assessor of competitions, or on any architect fortunate enough to be entrusted with the carrying out of great public works. A representative committee constituted of the best architects, with sculptors and painters, town-planners, engineers, and landscape gardeners, or others as the necessity of each reference might require, would have weight, influence, and authority of a kind not possible in any public official or department, or any single artist, however eminent. A call to public service in such a body would become a coveted distinction. Its concern might be only with designs and schemes of first-class magnitude and importance, national and metropolitan; but, once established, its influence would probably extend downwards, and aid in the solution of the difficult problem of æsthetic as well as practical control over the development of our towns. We have no wish to dogmatise upon its constitution and methods. We wish only to reiterate once again that something must and can be done to take away our reproach among nations—that we who have been a leader among them in all matters of self-government and administration, local and central, and in the development of industry and commerce, have yet been content, under a futile pretence of superior practicality, to lag behind in a proper civic pride in the adornment of our cities with buildings really worthy of the greatness of our institutions and the historical traditions which have grown up round this country.

The Safety of London Buildings.

IN the *Morning Post* on the 22nd ult. there is an interesting article on the effect of Tube railways in relation to the foundations of buildings, and a representative of the paper has interviewed Mr. John Belcher, R.A., Mr. Macartney, and Mr. Caröe on the subject. An eminent engineer is quoted as saying that, as the Tube railways lie in the London blue clay at a great depth below the sandy surface, the idea of any possible subsidence was "gammon." Mr. Belcher, on the other hand, contends that "the great increase of tunnels and subways is causing a great deal of disturbance to the older buildings of the metropolis, not to speak of modern structures." He says he has had to deal with many buildings in the City of London the foundations of which were often a foot above the soil on which they were originally placed, and which were "hanging suspended as it were" between, and supported by adjoining buildings. He adds that he has never liked the St. Paul's Bridge scheme, which, though "well away from the island site of St. Paul's, was nearer than he could conceive to be desirable." Mr. Macartney very picturesquely and appositely likened St. Paul's to "a battleship lying in dock." "The building is floating in water that is held in solution by sand. It is all right as long as you do not allow the water to leak away, but if you do the building may come down and break its back." We think it well that the public should have the opinion of eminent architects as well as engineers, who, able as they are, may yet hardly recognise the value we possess in our historical buildings—a value which may not be sufficiently understood by those who are mainly concerned in providing additional means for modern comfort and convenience.

The Preservation of Ancient Monuments.

THE *Times* in its issue of the 24th ult. gives some account of the evidence laid before a Joint Committee of the two Houses of Parliament on three Bills which have been introduced into the House of Lords dealing with the Preservation of Ancient Monuments. The Duke of Rutland, in criticising the proposed enactments, pointed out that, "while the order only appeared to mean that the owner must refrain from alterations, or additions, or removal, the owner might have to wait long before he got permission to carry out even urgent repairs." Also that the owner "could not sell unless the Commissioner of Works refused to buy at a price fixed

by the Board of Inland Revenue." He considers this a "dangerous and arbitrary power," in which contention we are disposed to agree with him, and we certainly agree with his argument that it is impossible for the Board of Inland Revenue to say what the value of an ancient monument is. The Duke being asked by Lord Sheffield whether local authorities should not be entrusted with the care of old manor-houses, tithe barns, and portions of abbeys now used as farm buildings, replied that he was "suspicious of local experts." Mr. Thackeray Turner gave evidence as to the damage done to ancient work in churches of recent years by so-called restorations. The golden mean between meddling and indifference in these questions is, we think, most difficult to arrive at, while it is the "consummation devoutly to be wished."

International Exhibitions. AN important Conference has been held at Berlin at which various questions connected with international exhibitions have been discussed. We are glad to note that, although the report agreed to has not been made public, it is understood that the Convention recommends the limitation of exhibitions held under the auspices of governments, and gives a minimum time which should elapse between them. We think that such a decision will be a relief to many firms who cannot afford to be unrepresented at exhibitions, and are yet indisposed to meet the continual heavy charges which they involve. It is stated that of recent years international exhibitions have been held almost every twelve months, with the result that a permanent charge has been laid on trading firms, while at the same time the public have been wearied by their frequent occurrence.

The Land Inquisition. STRENUOUS efforts have been made in Parliament to ascertain the composition and scope of the secret inquiry instituted by the Chancellor of the Exchequer as regards the land, but the sole result has been a series of replies cryptic in form and wholly evasive. All that has transpired is that, although Mr. Lloyd George is responsible for the formation of some Committee, he says he is not aware of the numbers or names of the persons employed, and considers it desirable to keep private the sources from which it is being financed, but he states public money is not being expended. Whether the Report is to be published and the methods employed to collect evidence the Chancellor declares to be matters within the discretion of the Committee. A secret inquiry countenanced by Ministers, but for which they seek to evade responsibility, is such a novel departure from the traditions prevailing in this country that it may safely be said it will be condemned by public opinion, and, attention having been drawn to its existence, it might be treated with silent contempt were it not for two considerations. The first of these is that a knowledge of its existence tends to hamper dealings in land, the granting of leases, and business generally, and therefore further depreciates this class of property; and the second is that if and when the information collected by unauthorised and very likely unqualified persons in a secret manner is published it may involve owners of land in considerable expense to rebut evidence collected behind their backs and at random. If public attention be once aroused to this form of espionage it is hardly possible that it should continue or ever be repeated.

The Situation at Norwich. WE are glad to see that the President of the Local Government Board is fully alive to the possibilities of the situation caused by the floods at Norwich. We note that he considers it a good opportunity for the Town Council to take the matter of housing in hand, and promises the assistance of his department. We hope, however, that the influence of the Local Government Board will be exercised in the direction of the larger question of town planning, and that the rebuilding at Norwich will not remain just an isolated improvement, but be properly related to some general scheme for the eventual improvement of the whole city.

Garden City Appeal for Funds. WE trust that the appeal for further financial support which has been issued by the Garden Cities and Town Planning Association will meet with the support it undoubtedly deserves. There can be no question of the value of this movement as a powerful influence tending to the uplift of humanity. Although in essence perhaps a reform which has social rather than artistic ends in view, rightly considered the two things are one. Architects owe much to its efforts, and should do everything in their power to help it. This Society has long carried a heavy financial burden, having been responsible for the propaganda of this movement from the start. This work increases in magnitude day by day, and the Society is now endeavouring to raise a guaranteed subscription for the next five years of at least 1,000*l.* a year. We hope that all those interested in civic design, who must realise how important this movement is, will respond to the appeal, so that the Society's efforts shall not be hampered by a lack of adequate financial support.

Liverpool Custom House. IN a "Note" in our number of May 31 last we adverted to the proposals for building a new Custom House for the port of Liverpool in lieu of the existing structure, which, we may here mention, was built in 1828–9, after John Foster's designs, on the site of the Old Dock (1710–1826), at the joint expense of the Government and the Corporation. We now read that the project to erect a new Custom House at the pier-head is abandoned. It seems that no settlement could be arrived at as to the division of the land in pursuance of an arrangement made between the Corporation and Messrs. Cubitt & Co., of London (who held an option to purchase the entire site of the Old George's Dock not yet utilised), whereby the latter were to retain two-thirds of the land and convey one-third to the Government for the new building, and that all the site will be now acquired by the Cunard Shipping Company for their new offices. The Treasury had agreed to defray the cost, estimated at 100,000*l.*, of the Custom House upon a site to be provided by the Corporation, and it is understood that the Mersey Docks and Harbour Board would contribute 10,000*l.* The Old Dock, opened in 1710 and closed in 1826, was the first after its kind constructed in England; George's Dock, since enlarged, was made in 1760–1.

Sessional Papers at the Institute. THE programme of the papers to be read at Conduit-street during the session 1912-13 has now been issued, and it is on the whole a fairly interesting programme, if it includes nothing—shall we say?—of sensational interest. We are glad to observe that we are to have some papers on modern work abroad, and that the more or less archæological type of subject, interesting as it may be, is not represented at all, for Mr. Ball's paper on "Bath and Wells" will no doubt be architectural rather than archæological. We welcome the papers on modern work abroad, because it is interesting to have brought home to us in a personal way, as a paper at the Institute does, what our *confrères* in other parts of the world are thinking about. Mr. Baker, of Toronto, is to read a paper on "Canadian Work"; Mr. Thomas Hastings, of the distinguished firm of architects, Carrère & Hastings, of New York, one on "Modern Architecture," which, we presume, will include the architecture of his own country, while to M. Billerey is allocated the subject of "Modern French Architecture"—all interesting subjects. Mr. Cecil Brewer, the Godwin Bursar of last year, and the architect, with Mr. Dunbar Smith, of the new Cardiff Museum, will no doubt in his paper on "American Museum Buildings" throw some additional light on the problem of planning connected with buildings of this type; while the papers on "Modern Steel Construction," by Mr. F. N. Jackson and Mr. Bernard Dicksee, and "Modern Hospitals," by Mr. A. Saxon Snell, will be no less instructive. Mr. Horace Porter's paper on "The Walls of Visby, Gotland," suggests the archæological view, but it covers new ground, and Mr. Porter is not likely to let the architectural issues of his subject escape him.

MODERN PICTURES AT THE GOUPIL GALLERY.

IT is no small praise to say that the seventh exhibition of the Goupil Gallery Salon, which was opened last week, is equal to any of its predecessors; we are not sure that it is not quite the best of the series. It is international—that is to say, that the pictures are either by French or English artists—but the prevailing atmosphere, even where English work is concerned, is French. Although the work represented is modern, the Post-Impressionists' influence is scarcely felt, except in the examples of those determined Post-Impressionists, Mr. Roger Fry and Mr. Peploe. Mr. Fry is Post-Impressionist under the influence of Cézanne (who would be a little surprised if he could see what is being perpetrated to-day), while Mr. Peploe is frankly a cubist, or something

of that sort. As a whole, however, the exhibition is eminently sane. We do not in any case need a manual of new theories to appreciate the quality of the pictures, some of which possess a definite architectural interest. There are some clever sketches of St. Mark's and the Campanile by Mr. Pearce. Sidaner shows an admirable study of the Fountain Court at Hampton Court, while Mr. Jamieson continues to discover excellent subjects in the statuary and pleasant waters of the park of Versailles. Time was, before the landscape school dominated the outlook of European painters, when architecture formed one of the chief accessories of pictorial composition. Within recent years Mr. Sargent has shown us that it may provide quite as good material as a portrait for the subject of a picture. If painters were to realise the psychology that may be discovered in fine design in building we should probably find the walls of picture-galleries less burdened by uninteresting repetitions of outworn effects. In the case of portraiture, for instance, the incessant striving for a new pose, for an artificial resemblance of naturalness which deceives no one, would be less apparent. There are two portrait studies of the kind at the present exhibition, which possess considerable technical qualities, but which are not otherwise interesting. M. Jacques Blanche, always an enterprising painter, breaks fresh ground in his studies of still life. They are not merely the detached affairs to which we are accustomed, a group of flowers in a vase, with a glass or two and some cutlery, nicely arranged on a glistening table (for the reflections) for the purpose of being nicely painted. The still-life formula is one of the most rigid in the art of painting. M. Blanche's pictures suggest none of this limitation of imaginative outlook; his flowers and vases and other table furniture provide not only a rich arrangement in colour, but also suggest that they form part of a rich and luxurious habitation, the living character of a room. The tenantless interiors of Mr. Patrick Adam obtain, after a staider fashion, something of the same quality of suggestion; they evoke the type of the absent inhabitants almost as clearly as if they had been portrayed. We must not omit also to mention the still-life studies of Mr. Livens and Mr. Connard. M. Cottet's two pictures of the coast and sea of Brittany (which deserve, by the way, a better position than below the line) are the work of a painter of a more individual temperament than the majority of his companions. His work is as far removed from audacious technical display as it is from purely theoretic artistic expression. We do not know whether M. Cottet is himself a Breton, although he has so closely identified himself in his art with its scenery and people that he would in any case seem to have caught the Celtic spirit. No painter has interpreted the life and natural scenery of Brittany more sympathetically. Above all, a naturalistic painter, and one of the innovators among French artists of this movement of a generation or so ago, the purposes of his art have been put to the service of a profound interpretation of things, not to a superficial parade of technical fireworks. We have scarcely touched the fringe of this most interesting exhibition, which offers so many contrasts in methods of work of first-rate importance, and which is never for a moment dull, while its animation is that of living and serious art.

CASTLE CARROCK SEWERAGE.

The Brampton Rural District Council have now approved and accepted the scheme of sewerage and sewage disposal for Castle Carrock prepared by the Engineers, Messrs. Taylor & Wallin (Mr. Harry W. Taylor, A.M.Inst.C.E.), of Newcastle-upon-Tyne and Birmingham. The sewage will gravitate to the outfall and be disposed of in modern bacterial works. Application for the necessary loan is to be made at once to the Local Government Board.

A COMBINED ordinary meeting and Camera, Sketch, and Debate Club meeting of the Architectural Association was held on Monday at Tufton-street, under the chairmanship of Mr. Gerald Horsley (the President).

Mr. Hall (Hon. Secretary) made the following announcements:—

That the annual Conversazione will be held at 18, Tufton-street on Thursday, November 21, at 8 p.m.; the next meeting of the Camera, Sketch, and Debate Club will be held on November 7, at 8 p.m. (Novices' Night), when papers will be read by Messrs. H. Bart Tunnard and H. E. Moss; and that arrangements have been made for a visit to be paid to the Wesleyan Church House on November 16 (Saturday). Members to meet outside the building at 2 p.m.

The President announced that the following had been elected members:—

F. A. Addey, Wakefield
R. Atkinson, Westminster
J. Barber, N. Finchley
G. W. Callender, Queen Victoria-street
R. D. S. Charles, Stanmore, Middlesex
J. O. Cheadle, Kensington
G. G. Clarke, Stockwell
L. Clark, Glamorgan
L. Claydon, Tunbridge Wells
J. H. Collis, Peckham
G. S. Cutts, Notting Hill
N. F. C. Day, Hampstead
C. A. Dickeson, Forest Gate
R. A. Duncan, Cardiff
F. A. Eschawzier, Sackville-street, W.
H. M. Fletcher, Lincoln's Inn-fields, W.C.
D. S. Glover, Wandsworth
G. E. Hamlyn, Ealing
R. Jackson, S. Croydon
C. W. Langlands, Doughty-street
W. H. Lloyd, Chelsea
E. Lyne, jun., Streatham
R. H. Maddock, Sutton
L. Marnus, W. Kensington
E. Meredith, Newbridge-on-Wye
J. L. Murgatroyd, Pinner
R. J. G. O'Donoghue, Epsom
D. J. Parr, Hampstead
L. Payne Wyatt, Brixton
I. B. Pite, Regent's Park
C. C. Polhill, Great Ormond-street
G. A. Rose, Wimbledon
J. S. Ruchwaldy, Singapore
H. Schein, Clapton
A. B. Schmuck, Bombay
C. L. G. J. Schumann, Highgate
J. S. S. Seddon, Victoria-street
G. W. F. Sexton, Brondesbury
A. Silcock, Kensington
E. A. D. Tanner, Fulham
W. E. W. Terrell, Reading
G. B. Tubbs, Aldersgate-street
F. P. M. Woodhouse, Wimbledon

It was announced by the President that Mr. W. G. Newton had been nominated to fill the vacant office of Librarian, and Mr. H. M. Fletcher to fill the vacant seat on the Council.

On the motion of Mr. Keen, seconded by Mr. Curtis Green, the Report of the Council for 1912 (printed in the Brown Book) was adopted.

SMALL COUNTRY HOUSES OF TO-DAY.

Mr. Lawrence Weaver gave an address on "Small Country Houses of To-Day," which was profusely illustrated by lantern slides. In his opening remarks he said he wished to guard himself against any misconception as to the way in which he proposed to treat the subject. He hoped no one would think he was there to instruct architects about their own business, and still less to advance any theories as to the course the design of small country houses ought to take, or was likely to take. It was natural enough that he should have views of his own about the various streams of tendency in modern design, and perhaps they would allow him to say that he did not think the sun of architecture first rose on Regent's Park. He was also unable to agree that Wren was a foolish old person whose chief function was to pave the way for the final glories of Soane and Nash. That, however, was by the way. His present business in life—a very pleasant one—was to act the part of showman and to try to make clear how excellent and varied was the work which the architects of to-day were doing, and to dispel, as far as might be, some of the fog of misapprehension which clouded the mind of people who are proposing to build. He endeavoured to make people understand that the building of their houses was the one branch of modern art in which they were most concerned, and he conceived it his duty to show as many widely differing types of houses as could fairly be said to represent an honest and unaffected outlook on the problem of fitting suitable houses to greatly differing needs and personalities. It was obvious that he must in the pursuit of this idea show many houses which some of them would think poor or even positively bad, but he could claim that he had never written with appreciation about a house which did not seem to him to have some definitely good point, either in its planning or its treatment, and that did not serve as a text which enabled him to explain how difficult were the problems which confront the architect. It was, then, in the spirit of the showman that he was going to put on the screen that night a series of houses chosen almost at haphazard from the large number which he had seen and described. As he had very rarely written about a house without first seeing it, he had had the advantage, which they would admit was a peculiar one, of learning from clients what they thought about their houses and about the ways of architects, and it might be that he would be able to indicate some points of view of the layman which might not always have made themselves apparent to architects. He would begin the series with one or two houses by Mr. Norman Shaw and Mr. Philip Webb, as they would agree that the great structure of modern architecture had been very largely built on the foundations which they laid, though he did not mean to exclude from that pioneer work such honoured names as Eden Nesfield, Geo. Devey, and others. Mr. Weaver proceeded to show a large number of photographs of houses, and divided the series into the following classes:—(1) XIXth Century Revival; (2) Traditional; (3) Influence of Materials; (4) Direct Historic Influence; (5) Foreign Influences; (6) Restorations; (7) New Ideas; and (8) Gardens. His first view was of the "Red House," built in 1859 by Mr. Philip Webb for Wm. Morris, which he described as the first red-brick house built in the XIXth century with conscious intention to use red brick for artistic design. It contained the first piece of modern furniture in the great press made by Wm. Morris, with paintings by Burne-Jones; "Coneyhurst," at Ewhurst, Surrey, was built by Mr. Philip Webb towards the end of his work, and the plan was much better than with the "Red House." The other two examples shown in the first class was "Dawpool," by Mr. Norman Shaw, and additions at "Chesters," by the same architect. In Class (2) the lecturer showed the house near Woking built by Mr. Horace Field for himself; two houses built in Leicestershire and Gloucestershire, by Mr. Ernest Gimson; "Coldicote," at Moreton-in-the-Marsh, by Mr. Guy Dawber; a cottage at Llanfairfechan, by Mr. North; a cottage by Mr. Curtis Green; "Ardkinglas," built by Sir Robert Lorimer; a house in Scotland built by Mr. Deas for himself; "Gilhams Birch," a house of the typical Sussex farmhouse type, by Mr. E. J. May; "West Chart," a house by Mr. Turner Powell; "Sunnymead," near Wadhurst, by Mr. Frank Chesterton; the "Deanery Garden," Surrey, by Mr. Lutyens; "Dyke Nook," Accrington, Lancashire, by Mr. Brierley; "Dawstone," Westmorland, by the late Dan Gibson; and "Acre Mead," Kent, by Mr. Brewer. Commenting on the various houses, the lecturer said that before he saw Mr. North's house he had a prejudice against Welsh slates, but after seeing it he appreciated how good the material was if used in the right way in the right country. Mr. North got them to cut the slates of reasonable thickness and reasonably small, and also got a quarry owner to reopen a quarry, from which he got beautiful grey and golden slates. With regard to the late Dan

Gibson, he had been struck with the affection in which he was held by his clients. Amongst other houses illustrated were:—"Redlands," Birmingham, by Mr. Bateman; "Four Oaks," by Professor Lethaby; "Winterbourne," by Mr. Ball; "Moorcroft," by Mr. Buckland; a house at Norwich, by Mr. Morley Horder; a room in a house at Birchington, by Mr. Arthur Bolton; a group of cottages at Checkendon, by Mr. Maxwell Ayrton; "The Platts," Petersfield, by the late W. F. Unsworth; an interior, by Mr. Baillie Scott, at Wimbledon; a Norfolk house, by Mr. E. S. Prior; and a house at Hertford, by Mr. Walter Cave. Mr. Weaver remarked on the important school of architecture at Birmingham, which seemed to have established something like a definite local tradition of building. Messrs. Bateman, Bidlake, Ball, and others, he thought, all followed more or less in the footsteps of Mr. Lethaby. Birmingham architects were very fortunate, because Birmingham men liked to build their own houses, and for the size of the city there was a larger number of satisfactory houses than any other place he knew of. Of the Checkendon cottages, the lecturer observed that it was one of the few places where half-timber work had been satisfactorily done. To see half-timber work in a London suburb where one could not imagine there was an adjacent forest was not so satisfactory. Of houses in Class (4) Mr. Weaver mentioned work by Mr. Lutyens, Mr. Bateman ("Castle Bromwich Rectory"), Mr. Macartney (at Woolhampton, Berks), Mr. Ernest Newton (at Wokingham), Mr. Albert Moore (at Wimbledon), and Mr. Goodhart Rendle. As examples of houses showing foreign influences, he illustrated the house at Knebworth designed by Mr. Lutyens for Lady Lytton, showing South African influence; a house at Camberley, by Professor Reginald Blomfield, in which French influence could be seen; a house by Mr. Detmar Blow, near Farnham; the Dormy House of the Walton Heath Golf Club, by Mr. Lutyens; a house by Mr. Ernest Willmott at Totton, near Southampton; and a house designed by Mr. Arthur Bolton in the Italian villa manner at Ewhurst. As instances of good restorations, he referred to Mr. Corlett's work at Guiseley Rectory, Yorkshire; Mr. Walter Brierley's work at Whixley Hall; and Mr. Quennell's house, Surrey, by Mr. Basil Stallybrass. In Class (7) he illustrated Mr. Edgar Wood's "Upmeeds," but said he did not think the architect had made out a case for the abolition of the arched roof. In conclusion, Mr. Weaver showed photographs of the garden at Mr. Inigo Triggs' house at Little Boarhunt; Mr. Lutyens' garden at Marsh Court; and a garden by Mr. Bidlake at Birmingham.

Mr. Quennell,
in proposing a vote of thanks to the lecturer, said that, looking at the house designed by Professor Lethaby twenty years ago, one could not help feeling that there had been no marked improvement since then. They were only doing very traditional work. The best part of their work seemed to be the planning. They planned a skeleton which could be roofed, and then they went back to the Jacobean manner, and little wheezes of putting tiles in walls and having thick mortar joints, and so on. He thought the average client looked very much on a house as he would look on a motor-car. To the client it was a practical thing, and if he got a little bit of art thrown in for the same money he was satisfied. The client had to live in the house, and whilst one felt that the planning of the house was good, yet when they came to the elevations they rather broke down. A thing which had worried him lately was the practical question of heating and cooking, and he thought in the next twenty years they ought to be able to get a kitchen range which would heat the house, cook the food, and give a supply of hot water. In looking at the photographs they also saw a lot of the antiques of which they were somewhat tired. In these days, to ask a person to sit in a chair made for a person in chain armour did not seem to him to be right. The interiors shown with the old furniture looked quite nice so long as they kept the lady with the hobble skirt out of the picture. In these days one had to be more practical and study hygiene and drains and that sort of thing. Houses were still abominably bad, and Professor Reilly, of Liverpool, in criticising some of the garden city houses, considered that the problem would be solved by much more simple and rational ideas.

Mr. Jenkins,
in seconding the motion, thought that the modern houses were a great deal better than the blue tiles and stock bricks and all the things one saw a few years ago when architects did not try to build rather on the old lines. He would like to hear what Mr. Weaver had to say as to bathrooms. They seemed to be tending towards the time when a bathroom, or at least a fitted lavatory, was required for every bedroom. The open loggia was an excellent thing, as one could breakfast in it during a large portion of the year. He believed there were several economical heating systems on the market which would allow them to keep the coal bill down. In some of the plans shown it appeared that the servants would have to go through the hall every time they had to answer a call at the front door.

Mr. A. T. Bolton
remarked that the whole question resolved itself into trying to find some compromise between the ideas of the client and that of the architect as to what the house ought to be. If they had certain qualities they could not have others, and the whole trouble in house building arose from the fact that the public did not understand. The client wanted a Jacobean manor-house and the wife French windows, and so on, and the house became a hideous muddle. In Birmingham the man who could afford it acquired a freehold and built a house, and if that was done in the South it would be much happier for everyone concerned. Now the builder put them up as a financial operation, and the work was credited to architects. With regard to the traditional cottage way of building houses, the old builders knew a lot about economical building, and whilst it was all very well to talk about building classical houses, yet it was a remarkably expensive thing to do.

Mr. Dale
agreed with Mr. Quennell in wishing they could build something a little more characteristic of themselves. Perhaps development might be made in the direction of hygiene, and there were no doubt valuable suggestions to be got from hospital planning, although he did not suggest they should make their houses like hospitals.

Mr. Arthur Keen
considered it a regrettable thing that they could not arrive at any possible standard in house design. The plans of houses were generally very good and met modern requirements, but there was a degree of affectation and a sense of over-design about most of them which could not fail to be disastrous. Mr. Norman Shaw had designed houses of all kinds which were very admirable, but he never seemed to have arrived at a standard, and he was beginning to despair of ever arriving at a recognised method of building a house.

Mr. C. Brewer
failed to see any analogy between a house and a motor-car. A man bought a car for a few years, but with a house it was altogether different. He also thought that if an architect had shown the photographs he would have been a good deal more severe than Mr. Weaver had been with regard to certain points.

The motion having been carried,

Mr. Weaver,
in reply, said Mr. Quennell was anxious for modern methods of construction, but there were by-laws which prevented anyone indulging in larks. The devising of an ideal kitchen range was not the business of the architect, and people who ran foundries would probably understand more about such things. If two bathrooms could be squeezed in a house it was an enormous advantage, and with the client that was often the test of successful architecture. There never would be a standard of design when they had forty millions of people in a country, most of whom thought they knew all about architecture. Mr. Philip Webb was consistent, but which of them could afford to take up the attitude which he took? He knew several architects who always built in the same spirit and had succeeded in retaining their client's regard, but it was largely a question of personal character.

The President announced the next meeting on November 11, at 8 p.m. Paper by Mr. J. A. Marshall, entitled "Marbles Used in Greek, Roman, and Byzantine Buildings."

THE BRITISH SCHOOL AT ATHENS.

A SPECIAL meeting of the British School at Athens was held on Tuesday evening at the Rooms of the Society of Antiquaries, Burlington House, under the Chairmanship of the Right Hon. Lord Justice Kennedy. A collection of drawings and photographs by members of the School and also the Finlay Memorial were on view.

The Chairman, in his opening address, referred to the pleasure it gave him to be present as one who had a firm belief in the supremacy of classical learning as an educational instrument, and who had found in the classics, and especially in the Greek classics, an endless refreshment in the turmoil of an active life. He heartily congratulated the School on its success, for the work it did was not merely noble in itself, but was productive of real and substantial benefit. The records of the School enlarged their store of knowledge of one of the most interesting regions and one of the most interesting peoples that the world knew. The work was not devoted altogether to what they were apt to call the classic period of Greece, but it was within the purview of the Institution to investigate the later periods through which the region had passed. He wished he knew a great deal more of what was called the Hellenistic period, and still more of the period which, alike in religion and thought, as well as to some extent in the realm of law, was comparatively unknown, viz., the Byzantine period. In spite of the work of Geo. Finlay, he felt far less acquainted in reality with the life lived during the first eight centuries after Christ than of any other period of well-known history. He was inclined to irritability when people divided history into ancient and modern, and spoke of languages as being dead or living according to their proximity to our own era, for it was impossible to separate by inter-compartments that which had contributed to the formation of modern life and character and thought. The Greeks and Romans, through their works of literature, were as alive as any so-called modern nation. He thought the School had fulfilled the prophetic words of Richard Jebb in 1883, when he said it was not to be exclusively a school for specialists of archæology, but was to be in the most comprehensive sense a school of classical study in Greek lands. This was illustrated by the fact that classical teachers and teachers of the cognate branches of geography and topography who were working in the colleges and schools had availed themselves of the facilities which the School gave at Athens, and he regarded that as of vital interest and important, in the sense that it created a claim not only on the Universities and the schools, but upon the public generally, who cared for the best education to subscribe. There never was a time when the life and the literature of Greece ought to be more studied than the present. We lived in days which, whether they could be called Philgar or not, in many other respects were at least not marked by a want of luxury or absence of advertisement. These were days in which they were not able to say that there was not a great deal which was false and untrue in what was preached as the best art and the coming art and literature. Therefore, he hoped they would have not less but more of that acquaintance with the great Athenian nation which, small in numbers, was great in intelligence and sanity of thought; which developed a humanism which to him, after Christianity, was one of the noblest features of the thought of mankind in any age; and a love of beauty extending to morals and every action of the common life. To quote the words of an able writer whose book he had recently read, "The Greek genius has its lesson, especially for us, in their marvellous directness in the view of life which keeps men from humbug and from false sentiment, which clarifies their thoughts, and teaches them to verify their emotions." And, lastly, he thought the lesson of individualism, the freedom of individual life, and life which was a conspicuous trait in the Athenian in his best days, was something with which the rising generation should be acquainted. They owed to them a great deal of literature of all kinds which they produced in the most perfect form that the world had seen, and it might be that through the efforts of the School, and of other like institutions, some statesman of some modern European country might be able to say to his

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St. John's Church, Herne Hill.

Mr. Leonard Martin, F.R.I.B.A., Architect.

people in the future what a great Athenian statesman could say with truth of his countrymen in Athens: "We are lovers of beauty without extravagance and of wisdom without effeminacy."

Mr. R. M. Dawkins, the Director, gave an account of the site of Datcha, the ancient Stadeia, on the promontory of Cnidus, on the western coast of Asia Minor. This was to have been the object of the School's excavation this spring, but the outbreak of the Turko-Italian war made it necessary to postpone the work. It is hoped to carry out the excavation in the spring of next year. The part of the site selected has already yielded a number of antiquities to local treasure-hunters, and Mr. Dawkins thinks there is every reason to suppose that below the surface are the remains of an important sanctuary or temple of the archaic period of Greek art. The researches of the Librarian of the School, Mr. F. W. Hasluck, have added considerably to the interest of the site. The story of the Knights of Rhodes searching for building material to repair their Castle of St. Peter at Budrum, the ancient Halicarnassus, and how they found a building covered with sculptures, which they first admired and then destroyed, is well known. This building has hitherto been supposed to have been the famous Mausoleum of Halicarnassus, one of the seven wonders of the world, the sculptures from which are now in the British Museum. Mr. Hasluck has shown that there is good evidence that this view is incorrect, and that the building found was not at Halicarnassus, and was consequently not the Mausoleum, but some quite different building at the site now known as Datcha, the distance of which from Halicarnassus by sea is inconsiderable. Of so fine a structure some remains must have been left, and it is hoped that an examination of the site will reveal them; in any case, Stadeia must have been a place of some importance to have contained so magnificent a structure.

Mr. Wace then briefly described the excavations of the School in Thessaly, and outlined the results of exploring journeys undertaken by Mr. M. S. Thompson and himself in Macedonia on behalf of the Macedonian Exploration Fund. At Halos, in Thessaly, some experimental excavations were made in the Necropolis. The principal results were obtained from a tumulus, one of a group of ten. This, which is 2 metres high and 17 in diameter, was found to conceal sixteen burnt graves or pyres. The bodies had been burnt on the spot, and then a cairn of huge slabs, about ½ metre high, was heaped over them. Later, the tumulus of earth was built over the group of pyres. With the dead were burnt also all their gear, quantities of geometric or Dipylon pottery, iron knives, and iron swords and spears or bronze brooches and bracelets. In the six pyres which contained bronze brooches and bracelets no weapons were found, consequently those are probably the graves of women. While in those which contained the iron weapons, there was no bronze, and these are the graves of warriors. A warrior's equipment consisted of an iron sword, an iron spear, and two or more long iron knives. No traces of helmets or body armour were found. These pyres, which are most interesting in that they recall the Homeric method of burial, belong to the developed iron age, and date probably between 900 and 800 B.C.

In Macedonia many important inscriptions have been found, including an important boundary decree of Trajan settling the frontier between Thessaly and Macedonia, and three letters written by Demetrius II. on behalf of his father, King Antigomus Gonatas, to the city of Berrhœa. The site of Argos Oresticum has been identified, and considerable attention has been paid to the meeting of Byzantine Churches worth further and detailed study.

The explorers have devoted some time and trouble to the study of the Wallachs or Vlachs, the southernmost branch of the Rumanian race. The manners and customs of this little-known but interesting people, which the lecturer proceeded to illustrate, are exceedingly interesting from an anthropological point of view.

CHURCH OF ST. JOHN, GUERNSEY-GROVE, HERNE HILL, S.E.

THIS building, recently completed, consists on the lower ground floor of large assembly hall with platform and classrooms.

In connexion with the hall is a kitchen with gas coppers for tea and coffee, china and chair store and lavatories. The vestry is also placed on this floor and by means of a special staircase communicates with the church on the upper ground floor. This special staircase would also be used as an emergency exit in case of fire.

Externally the building is of red brick of varied hue with Portland stone dressings to windows and doorways, etc., with red tile roof and bell turret covered with oak shingles.

Internally the walls are plastered and finished pale cream; the pews are stained dark green, and the woodwork of altar, panelling at back of same, choir stalls, pulpit, chancel rail, and joinery generally of Austrian oak slightly fumed.

The paving of the church generally is of pitch-pine wood block "riff sawn"; the steps and paving of chancel are of white and green marble.

The gas fittings were specially designed by the architect and form a pleasing feature of the interior.

In spite of the usual trouble of small funds available, an effective interior has been produced, the design of the whole of the fittings having very wisely been left by the Building Committee to the architect, who has thus been enabled to produce a harmonious whole, simple in character but dignified in proportion.

The general contractors were Messrs. F. & H. F. Higgs, of Station Works, Hinton-road, Herne Hill, S.E., and the architect was Mr. Leonard Martin, F.R.I.B.A., of Seymour House, Waterloo-place, Pall Mall, S.W.

ARCHITECTURAL SOCIETIES.

Liverpool Architectural Society: St. George's Hall.

Mr. Hartwell Grayson, President of the Liverpool Architectural Society, inaugurated the sixty-fifth winter session on the 21st ult. at the Society's Rooms with an address, in the course of which he said:—"The topic of the moment is undoubtedly the fate of the St. George's Hall podium. The controversy, which has now lasted two years, should be

settled during the winter. In the meantime the interest of the public has been most gratifying. Quite a number of people are sincerely trying to understand the points at issue. Unfortunately, many believe that plain walling represents cheapness and shows a lack of imagination, and they cannot understand what we mean by epithets such as "repose" and "strength." The difficulty of appreciating the simple is perhaps a heritage from the Gothic revival. The man in the street remembers that one of the most delightful characteristics of Gothic is its adaptability to an irregular site. He forgets that Renaissance architecture is not so elastic and that Greek is infinitely more exacting. The last demands and insists on uniformity in both site and surroundings and ample spaciousness in these surroundings. This truth was obvious enough to Elmes and Cockerell when they designed St. George's Hall, but it is hard to explain to laymen. Elmes did not make the chief entrance at the southern end of the Hall because it was lacking inside and outside fore and aft in vista and in spaciousness, but more especially because on the east front there was a fine level "place" with ample room for a dignified approach. His plan is logical, scholarly in the details, and admirably suited to the plan and to the site. Notice his treatment of the steps to Lime-street. He gives two flights of ten steps each separated by a 10-ft. landing. These steps have a bare 6-in. rise and 15-in. tread. They are completely in scale with the colonnade, but the actual steps seem fully steep when compared with those at the west and north entrances to St. Paul's Cathedral, which have 14½-in. treads and 5-in. risers; or those at the main entrance to the British Museum, where the treads are also 14½ in., but the risers 5½ in. At the south end of St. George's Hall Elmes maintained the same level of the colonnade for the portico; a different level might have introduced an element of restlessness. The portico stands less than 40 ft. back from St. John's-lane, and is about 29 ft. above it. For a descent with steps to match those in front of the colonnade at least sixty would have been required. The space necessary for sixty steps with adequate landings is about 120 ft.

It is not surprising, therefore, that Elmes decided that no descent to St. John's-lane was practicable. Instead, he formed a spreading base, composed where seen in perspective of eight blocks of masonry, 15 in. high and 2 ft. 5 in. wide. They, again, are wonderfully in scale with the whole design. Where not seen in perspective, close to the wall east and west of the portico and on the axis, these blocks are divided into two, and make an uncomfortable and undignified stairway, perhaps just good enough for the few who use them. Below the last step there is a stone terrace 23 ft. wide, ending in the podium—a massive battered wall of masonry, unbroken for its full length of 160 ft. The spreading base, the platform, and the podium are logically just as much part of the composition as the sculpture in the pediment. They blind the eye to the fall in the ground, they separate the building from the turmoil of a busy thoroughfare, and, above all, they add strength and power to the design. The plan temporarily approved by the City Council destroys all Elmes's carefully-thought-out efforts. The podium becomes two flanks, two pedestals, and a space. The platform is split into three landings. A very dangerous flood of forty-seven unnatural steps flows over on to the sidewalk. The aloofness of the Hall from the tramways and traffic is gone. And why? Who wants to climb forty-seven steep steps? Is there really no other site available for the proposed Royal memorial? Will an equestrian statue, blocking the traffic, placed on one side of the steps, almost on the top of a public convenience, meet with the approval of the Royal Family? No answer has ever been or can be given to these simple questions.

There are only three possible benefits. The first is to the building, for the abruptness of the finish between the podium and the stone-yard will seem less marked. The second is to ourselves, for we have been unofficially informed that in the Local Government Board Inquiry evidence of an architectural character will be admissible. This will form a most valuable precedent. Far too many so-called public improvements have been passed where doubtful utility has been the excuse for unnecessary vandalism. The third benefit is to the citizens of Liverpool. The controversy has opened their eyes to the world-wide fame of St. George's Hall. It is the one art treasure that Liverpool possesses. When Harvey Lonsdale Elmes ended his brief life of thirty-three years he had gained admittance to that select band who have created something to be admired and studied, not merely by their neighbours and contemporaries, but by students of all nations and all times. He was not, of course, one of the world's greatest men; he was not even a pioneer. He was the last of that scholarly

St. John's Church, Herne Hill.

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band of English architects who worked steadily on in the footsteps of Inigo Jones until they were snuffed out by the Gothic revival. Elmes carried classical architecture just one definite step forward. He had a very great opportunity, and he stamped it with the hallmark of the "grand manner." No native art-worker since Wren, except possibly Sir Joshua Reynolds, has left such world-wide fame behind him. It is therefore not surprising that the Council of the Royal Institute of British Architects last Monday unanimously resolved to protest against unnecessary meddling with St. George's Hall, that a similar resolution has been passed by the Historic Society of Lancashire and Cheshire, and that individual protests have been received from Europe and America. However, thanks to the generosity of numerous members and friends, there are ample funds for fighting the city plan whenever an opportunity occurs. My own impression is that no opportunity will occur. The scheme is rapidly dying. It was never popular, and its authors will be glad to quietly let it drop. Some lessons, however, have been learnt by both the City Council and the public. No more such schemes for altering our landmarks will be launched at the suggestion of an eminent sculptor. Local advisers, whom in the past the City Council has gaily overlooked, are not likely to be permanently ignored. As defenders of the *status quo* this Society has earned some respect and aroused some local patriotism. When next a big public improvement is projected the ratepayers will expect Liverpool architects to be consulted."

A cordial vote of thanks to the President, coupled with a recognition of the services of a gentleman who had exhibited through a new electric lantern seventy slides of recent and important works by members of the Society, was accompanied by a consensus of opinion in support of the Presidential declaration that St. George's Hall must not be touched.

Mr. A. Thornely (a Past-President) said one could not understand why the original scheme for the proposed alteration was put forward, and though the amended design was a vast improvement upon it, the public would see that the Hall must be let alone, and not touched in any way.

Mr. Eccles endorsed these remarks, agreeing that the podium must not be altered.

Manchester Society of Architects: "Growth in Architecture."

At a meeting of this Society on October 24 Mr. Halsey Ricardo lectured on "Growth in Architecture."

In Professor Lethaby's little book on architecture he said there is that pregnant statement, "No art that is only one man deep is worth much. It should be a thousand men deep." It is much the fashion to accentuate the names of the architects of famous masterpieces and to regard them as the sole creators and originators of their work—to regard such men as Brunelleschi, Michelangelo, and others as creative ends in themselves, as independent phenomena who individually affected and controlled the tendency of their time. Yet from another point of view we may look on them as resultants rather than causes. Their environment has produced them, not they their environment.

The stream of life is immortal and the various mortal shapes in which it is manifested are the outward signs of its current, and owe their characteristics to the composition of the stream at the moment of their appearance. In our tributary of this stream the building instinct is immortal. Its manifestation at any period depends upon the ideals, the structural resources of the time. The dominant determinating factor is the main stream of life. The history of the world is shown by its art with faithfulness exceeding all other record, with an eloquence unpremediated by the craftsman.

This Mr. Ricardo then proceeded to show by a masterly view of the history of the arts, commencing with a contrast between the Assyrian bas-relief, with their tale of cruelty, strife, and oppression, to the Egyptian hieroglyphs, expressing their belief and hope in a future life, their delight in nature and animal life. Especially lucid was the account of the passing of Mediævalism and the dawn of the Renaissance, the lecturer emphasing the growing tendency of the craftsman of the Middle Ages to perfect his own craft, giving it individualistic excellence, losing his view of the wole work, and the characteristic of the mediæval genius.

The emergence of the specialist paved the way for the revival of learning. Coming to modern times, Mr. Ricardo maintained that the impress of our social, religious, and public life on any example of our work is greater than that of the individual architect who designs it. The buildings of our age express its temper; and posterity will look back upon our present period as one of high endeavour, even if we have failed in high achievement.

Nottingham Architectural Society: President's Address.

The opening meeting of the winter session was held at the Society's Room on the 23rd ult., when the President, Mr. Ernest R. Sutton, F.R.I.B.A. and member of the Council of the Royal Institute, delivered his Presidential address, in the course of which he said:—

"The Council have been in communication with the University and School of Art authorities on the question of establishing classes embracing the subjects included in the Intermediate and Final Examinations of the R.I.B.A. It is most gratifying to be able to report that these classes have been instituted, and it is hoped that the students will show their appreciation of the steps taken by the Council by attending the classes, which should be of the greatest assistance to those preparing for the Institute examinations. I hope that ere long all architectural classes for students throughout the country will be linked up with our University centres and the R.I.B.A.

The Council have instituted a special Committee to undertake all matters connected with the Town Planning Act. I am glad to know that Mr. A. W. Shelton has consented to join this Committee. It is proposed that the Committee shall get in touch with all local authorities at an early stage, and before they have actually prepared the completed scheme, in order that suggestions can be most effectually made both in regard to the planning and regulations comprised in the scheme.

A Trade Question.

There is a question that will, I believe, have to be considered by us in the near future. That is our position with regard to the contractors adding 10 per cent. in all provisional items irrespective of the amount or class of work. In many cases this amount appears to be excessive, and more especially when the contractor does not add anything for his own services in connexion with his subcontractors. Let me just give you an illustration:—You have a block of warehouses; the heating or electric lighting amounts to, say, 500*l*. If we include this in the quantities the client will have to pay an additional 10 per cent. of 50*l*. If it is kept out of the builder's contract, our client will have certainly the trouble of drawing two cheques, but he will be 50*l*. in pocket less the penny stamp for the cheque.

Now, what is our position? If we are instructed by our clients to omit all provisional items and treat them as separate contracts, has the builder any grounds for complaint? On the other hand, if we do not explain the 10 per cent. commission, what is our position with regard to our client?

A Nottingham Street Improvement.

I should be neglecting my duty as your President were I not to make some reference to the finest improvement scheme undertaken by the Corporation for many years—the widening and rebuilding of Carrington-street.

The inability to successfully manage our street architecture appears to be almost a national weakness when one considers the prominent examples we have before us. Look, for instance, at the Regent-street rebuilding scheme, the "Piccadilly blunder," and, again, the collection of promiscuous buildings in Kingsway. Now, with regard to Carrington-street, I hope I am not getting on thin ice, but it is foolish to ignore the lessons which past mistakes have taught us. The initial mistake was sacrificing too much to the individual shopkeeper. The architect should have been given a free hand to design a façade of a monumental character, and worthy of one of the finest streets in the city, and not be hampered by the hundred and one special requirements of a vast number of tradesmen carrying on different trades. It is not very difficult for us to realise what a magnificent street our ex-President would have given us if he had been allowed to carry out the whole of the buildings on somewhat similar lines to the very successful Carrara terra-cotta façade. The opportunity of obtaining a grand approach to our city, flanked on either side by buildings worthy of such a position, has now unfortunately been lost.

Competitions.

I am introducing the subject of competitions this evening with the object of raising a discussion on the question. I am of opinion that we should use every endeavour to limit the number of competitors in all cases. In almost all open competitions the competitors expend collectively in the preparation of their designs a sum far exceeding the fees that the successful architect receives for the whole of his services. This is a very expensive luxury for the profession to be saddled with, and one which we can ill afford to keep up. I cannot see how the cost of preparing competition drawings is to be reduced. You must, if you are to stand a chance of success, work out your scheme in every detail, and the draughtsmanship must be of a high order.

The conditions as revised by the R.I.B.A. Competition Committee are much improved, but I should like to suggest a further improvement—that the responsibility of nominating an assessor shall be in the hands of the Committee, and that the assessor shall be an architect who has either specialised or is an acknowledge authority on the particular subject.

The Royal Academy Exhibition.

I should like to refer to the Royal Academy Exhibition. I think we have a real grievance here with regard to the amount of accommodation allocated for the exhibition of architectural drawings, though I can quite imagine the authorities replying:—

"It is the least popular room in the exhibition, except with the dear old lady, who just pops in to have a quiet little snooze." This, I must reluctantly admit, is the case, and I regret to say it is in a great measure due to our own action. If we wish the general public to take an interest in the works exhibited in this much-neglected room we must supply drawings that have some interest to "the man in the street," and I would advocate that in all cases the drawings should be of buildings which have been recently erected or are in course of erection. Many of the drawings which find a place on the walls are of buildings that do not, and never will, be in existence; rejected competition drawings and fancy pictures culled from the highly imaginative brain of the artist.

Registration.

The question of Registration is bound to be much in evidence this session owing to the Council of the R.I.B.A. having a large majority of its members pledged to support Registration. It is perhaps worth while to review the question and see just where we stand. Registration has been before the profession more or less prominently for many years, even before the birth of our Society, but no definite plan of action was suggested until the Society of Architects made Registration the keystone of their policy. The R.I.B.A. were urged by a small section of their members to pursue a similar policy; this has been done for some time with varying enthusiasm according to the personnel of the Council. In 1905, I think it was, the Registrationists formed a strong Committee and nominated for the Council a group of men committed to their policy. They were successful at the election, and in 1905 a Bill was drafted and presented to the members of the Institute. The Bill was, however, rejected.

In 1908 the question was again to the fore, but it was obvious to all that if a Bill was to stand the slightest chance of becoming law the scope of the Bill must be considerably widened. With this object in view another class of members was created—the Licentiate. This was the means of attracting to the ranks of the Institute a large number of architects. It was also proposed to join forces with the Society of Architects, and a Bill was drawn up for the Society of

Architects to be amalgamated with the R.I.B.A. The new Bill was prepared, and in January of this year was presented to the members. There was strong opposition to the amalgamation of the Society of Architects, and an amendment was carried, "referred back to the Council for further consideration." At the first Council meeting of this session a strong representative Registration Committee was appointed to consider and report on the question. What conclusions this Committee will arrive at it is impossible to say, but I am of opinion that a Bill will be drafted on such lines that it will be acceptable to all classes within the walls of the Institute.

As I have on several occasions spoken against Registration, I should perhaps state that I am now strongly in favour of Registration, and one of my chief reasons for this change of attitude is that I fail to see how we can set up a high degree of education unless we keep before us the advantages of Registration. It is impossible to exaggerate the importance of education. We find on every hand in every walk of life a higher standard of education is demanded, and it is essential that the architect of the future shall be thoroughly trained in his art and of a higher educational standing than in the past, if the status of the architect is to be maintained, so that he may take his proper place in the group of learned professions.

I am not convinced that Registration will confer any pecuniary benefit on the average architect. Competition will, I imagine, be keener for this reason.

The boy who enters the profession to-day is, as a rule, one who has a desire to design, to create; he has a strong natural desire to become an architect. But when we have obtained our Act of Parliament and are a closed profession is it not probable that many will be attracted who have no aptitude for the work? This, I sincerely hope, will not be the case. In conclusion, gentlemen, let me impress upon you that, whatever trials and difficulties we may be called upon to face, we must at all times remember that we are members of a noble profession, and that no career has greater possibilities for influencing the world in which we live. It is an art that perhaps more than any other marks the character and history of nations. Surely the advancement of such an art is worth living and working for."

After the address the members adjourned for refreshments kindly provided by the President, and on returning to the lecture-room a hearty vote of thinks was accorded Mr. Sutton for his address and hospitality.

A discussion on the various points mentioned in the address followed.

The Nottingham Society celebrate their jubilee this year by a conversazione on November 12.

Architectural Association of Ireland.

The first ordinary meeting of the session of the Architectural Association of Ireland was held on the 22nd ult., in the Rooms, 15, South Frederick-lane, Dublin. Mr. George L. O'Connor, F.R.I.A.I., President, presided.

New University College Buildings.

At the opening of the proceedings the Chairman, on behalf of the Association, tendered their congratulations to Mr. Butler, a fellow member, whose designs for the proposed new buildings of the National University had obtained first place, and also to Mr. Hill, of Cork, and Mr. Cullen, whose designs had been adjudicated second and third respectively.

Presentation.

In connexion with his recent marriage, Mr. Page Dickinson was presented by the Chairman, on behalf of the members of the Association, with a silver salver. In making the presentation the Chairman said that Mr. Dickinson, who was lately the President, was held in the highest esteem by them all.

Mr. Dickinson returned thanks.

President's Address.

The President then delivered his inaugural address. He said that fortune's wheel was turning for the country was evident by the increased activity in the building trade—a sure sign of general advancement and commercial prosperity. Such a change would be appreciated by the architects. Given the needful opportunity to display his skill, he would say, without hesitation, that the Irish architect was capable of holding his own with any of his professional brethren throughout the world. Unfortunately, when opportunities did arise the work was handed over to some one across the Channel. He condemned that principle and those responsible for such unworthy actions. Some of the large insurance companies, as well as several of their nobility and gentry, were the chief offenders. He trusted as time progressed such occurrences would cease entirely. In this connexion it was cheering to bear testimony to the spirited action of the governing body of the National University and the Dublin Corporation in throwing open the doors of competition so that all Irish architects might enter and present samples of their originality and skill in the designs submitted for the new buildings. All credit was due to them for their recognition of the Irish architects' work, and there could be no shadow of doubt that when the selection of designs took place the results would amply prove that Irishmen had still the brilliancy of thought and action and cultured refinement for which they have long been famed. He referred to that auspicious event of a few days ago, which was destined to make its mark indelibly on the architectural life of this country—the establishment of a School of Architecture in the National University. The advantages of such a school could not be over-estimated, and he was confident that under the capable tuition of Professor Scott the young architects of Ireland would have afforded them those opportunities for which they had so long waited, and without which they had been seriously handicapped in competition with their more favoured brethren in Great Britain, where such schools existed. Already the signs of improvement were with them, notably the development of town planning. The housing of the working and lower middle classes was one however that required, and was obtaining, immediate and earnest attention. Already they saw schemes in process of construction in the city and in many provincial towns. The much criticised, and sometimes abused, Dublin Corporation had led the way, and they were being quickly followed by the urban bodies, notably the Pembroke Council, in endeavouring to adopt the "garden city" principle as far as possible in the laying-out of the sites. The young man starting business might despair because cathedrals and town halls did not call for a display of his talents. He should remember that a hygienic and comfortable home, not unbeautiful in its external appearance, suitably planned to house the worker, was of really more importance to a nation than magnificent public buildings, and should not be beneath anyone's interest.

Mr. Kaye-Parry proposed a vote of thanks to the President for his address.

Mr. P. J. Lynch, who seconded, said that as the Town Planning Act did not apply to Ireland they should not be wasting time on it, but should concentrate their efforts on the question of the housing of the poor.

GENERAL NEWS.

The Royal Institute of British Architects' Board of Architectural Education.

The Board of Architectural Education of the Royal Institute of British Architects announce that the designs submitted by the following students, who are qualifying for the Final Examination, have been approved:—Subject IV.—"Design for a Senate House for a Modern University"—Messrs. E. F. Bothwell, A. D. Clare, H. A. Dod, R. Duckett, E. Gee, E. H. Gibson, K. Glover, E. Prestwich.

King's College, London.

Mr. A. H. Jameson, M.Sc. (Manchester) M.Inst.C.E., formerly Bishop Berkeley Fellow in Engineering, Owens College, and, since 1909, Resident Engineer on the Thirlmere aqueduct, has been appointed to the part-time Professorship in Civil Engineering (London University), tenable at King's College.

Appointment: British School at Athens.

The Craven Committee, Oxford University, have recommended Mr. Stanley Casson, B.A., Senior Scholar of St. John's College, for appointment to the Studentship in the British School at Athens.

Southwark Bridge.

The tender of Sir William Arrol & Co. for the reconstruction of Southwark Bridge has been accepted, and the work will be commenced as soon as possible. The tender provides for the demolition of the existing bridge and the building of a new structure on the present site as provided by the Act, passed by agreement between the City Corporation and London County Council. The gradients of the new bridge will be eased, and until it is completed the carrying-out of the new St. Paul's Bridge cannot be entered upon.

Visit of Continental Engineers to London.

A deputation of members of the Association Générale des Hygienists Techniciens Municipaux, and consisting of about 150 representatives of cities and towns of France, Belgium, Poland, Switzerland, and Luxembourg, have arrived in London. Amongst the places visited by them are the Engineering Exhibition at Olympia, and under the guidance of Mr. W. B. Bryan, Chief Engineer, the Metropolitan Water Board's pumping stations near Hampton Court.

The Riverside Improvements, Millbank.

Progress is made with the construction of the riverside embankment which will extend to Grosvenor-road, at the foot of Lambeth Bridge, which for longer than two years past has been closed to the passage of vehicles. For the new work some 50 ft. in width has been reclaimed from the foreshore between the bridge and Victoria Tower gardens, and the embankment will permit of an extension of the gardens in alignment with the terrace of the Houses of Parliament. It is stated that a site will be assigned to M. Rodin's group in bronze, "The Burghers of Calais."

The Home of Corneille at Rouen.

The birthplace (1606) and home of "Le Grand Corneille," No. 4, Rue de la Pie, Rouen, has been acquired by the Municipal Council for 1,360*l.*, which sum, being the vendor's price, was raised by a committee. The façade of the house will be restored to its pristine condition as it was one hundred years ago, and the ground and first floors will be adapted for purposes of a Corneille Museum.

Safety Appliances Museum.

Mr. Gill asked the Home Secretary whether any steps had yet been taken for the establishment of a Museum of Safety Appliances as recommended by the Accidents Committee—Mr. McKenna: A museum of safety and health appliances has been under consideration for some time. It has been decided to erect a special building for the purpose, and a site has been secured in a central position in Westminster. Plans have been prepared after consideration of the arrangements in the most important of the museums of this kind on the Continent, and it is hoped that a commencement will be made with the erection of the building at an early date.

A New Theatre in Soho.

Mr. W. G. R. Sprague has been appointed as architect of a new theatre, with 660 sittings, which is to be erected upon the site abutting on West-street, Tower-street, and Lumber-court, recently purchased by Mr. Herbert Jay.

The Late Lord Peel.

Viscount Peel, who died on October 24, aged eighty-three years, was a Trustee of the British Museum, late Chairman of the Trustees of the National Portrait Gallery, Visitor of Balliol College, Oxford, and for a while Chairman of the Council, Toynbee Hall.

The Melton Prior Memorial.

A memorial to Mr. Melton Prior, the war artist and correspondent, was unveiled in the crypt of St. Paul's Cathedral on the 22nd ult. by Field-Marshal Sir Evelyn Wood, V.C. It consists of a bronze medallion of Mr. Prior, in bas-relief, set in a large tablet of onyx, with tints of white, brown, and green; and was designed and gratuitously executed by Mrs. Bennet Burleigh, the wife of the war correspondent.

French Textiles.

The exhibition of French textiles from the Mobilier National, Paris, has proved of so much interest to visitors to the Victoria and Albert Museum that application has been made to the French Government for an extension of the period of the loan. It comprises a series of seven tapestries woven at the Gobelins factory for King Louis XIV. after Raphael's frescoes in the Stanze of the Vatican, four Savonnerie carpets of the same period, and a collection of woven silk fabrics and embroideries of the early part of the

XIXth century. The exhibition was opened to the public on July 18 in the North Court of the Museum for a period of three months, and it has now been arranged, by the courtesy of the French Government, that it shall remain on view until Monday evening, November 11.

The Health of the City Worker.

A conference on "The Health of the City Worker," under the auspices of the Incorporated Institute of Hygiene, has taken place this week at the Guildhall. The Lord Mayor, who opened the proceedings, said that he believed that the principles which applied to the health of the City worker would apply equally to all private houses. During his sixty years' practice of medicine in the City he had seen an almost entire rebuilding of rooms in which clerks worked. It was his experience that the health of the clerk was well looked after, but it was well that with improved ideas the subject should be well ventilated. Referring to the drainage of the City, he said the improvement had been marvellous, and the health of the workers had seen a corresponding change for the better. Many fevers had disappeared from the City. In his youth typhus was no uncommon thing; now it was unknown in London. With improved water supply enteric was very rare.

Westminster Hall.

Mr. King asked the representative of the First Commissioner of Works whether he could give the House any information concerning the statue, supposed to be of a certain monarch, recently erected in Westminster Hall over the door leading to the Members' entrance.—Mr. Wedgwood Benn replied that the attention of the Commissioner of Works had been drawn to three stone statues of kings in the Tufton-street Museum which had been removed from Westminster Hall. They were well preserved works of the end of the XIVth century, but in the absence of any symbols or accessories, it was not possible to say what kings they represented. The First Commissioner now proposed to bring them back, and he had had one set up experimentally in Westminster Hall.

Improvements to the House of Commons.

Mr. King asked the representative of the First Commissioner of Works whether he could inform the House if it was intended to undertake, in connexion with the Estimates for the next financial year, any alterations or improvements in the building or appointments of this House; if so, what the nature and extent of such works, if any, would be; and what means he proposed to take to consult Hon. Members before altering the building in which they had to spend so much of their existence.—Mr. Wedgwood Benn replied that various proposals were under consideration, but the opinion of Hon. Members would be sought before any considerable changes were decided on. He would welcome suggestions.

BOOKS.

The Blight on the Countryside. By FRANK ALTON MORGAN, author of "Fruit Cities," "The Story of an Essex Farm," etc. (London: The Whitehall Publishing Company, Ltd. 66 pp. 1s.)

THE objects of this small volume are stated in the Preface to be to call the attention of the public "to the misery and suffering caused throughout the country to the thrifty classes of the community by the system adopted of administering the land clauses of the Finance Act, 1909-10," to the extraordinary methods of valuing small properties, to the disastrous effects of the Act upon smallholders, the illusory nature of the exemptions to small cultivators, and the general check to land development created by the administration of this measure. The work deals with the question of house property as well as agricultural holdings. Having summarised the objects of the work, we may state that the author is a Welshman and a supporter of the Government, and he approved the Finance Act on its introduction enthusiastically, but he now confesses that he is disillusionised, and readers of these pages will see that his conversion on the subject of the Finance Act is complete, although he is still a supporter of the Government. We fear many persons like the author formed their opinion of the Finance Act, not upon the Bill itself as introduced, but upon the speeches with which it was introduced, and that this is too often the case nowadays.

The contrast between what was put forward as increment value and what it is in practice is well brought out in these pages. The author describes the system of valuation as the "Mad Hatter" system, and observes that under it private enterprise in connexion with houses and land will be shattered, and he points out that its full effect has still to be experienced. The title of the work is not wholly original, as an article entitled "The Blight of the Land Taxes" appeared in the *Nineteenth Century and After* in September, 1910. The author writes in a very colloquial style, but he appears to have a considerable grasp of his subject, and we commend this very interesting little volume to the attention of our readers.

The Cheap Cottage and Small House: A Manual of Economical Building. By J. GORDON ALLEN, A.R.I.B.A. (Letchworth Garden City Press, Ltd. 1912. Price, in paper 1s. 6d., cloth, 2s. 6d.)

NOTHING would so tend to improve the aspect of our villages and the outskirts of our towns as to devise some means whereby the very smallest type of habitation should enjoy the advantages to be derived from the knowledge and skill of the architect.

The difficulty being, we suppose, principally an economic one, it seems to be open to the architect to show that he is not merely a luxury which this type of building cannot afford, but that his special skill can effect such economies or produce such added value as shall more than balance the cost of his employment.

This book, the second edition of which we now welcome, appears to tend in that direction—to prove that beautiful buildings are not necessarily expensive nor ugly ones necessarily cheap. As Mr. Allen says:—"It may well be argued that the very qualities that make for cheapness tend towards a pleasing appearance," and his book goes far to prove it. Mr. Allen appears to have made a close study of economical building, and a special feature of the book is the definite information, based on actual experience, of the cost of houses ranging in price from 105*l.* to 800*l.*, plans and views of which are given. Many of these designs are admirable. The book is full of information and suggestion on every aspect of economical building, and should be useful to all those interested in a subject of such great importance to the welfare of the community.

Nothing Gained by Overcrowding. By RAYMOND UNWIN, F.R.I.B.A. (Garden Cities and Town Planning Association. 1912. Price 3d.)

ALTHOUGH public opinion is always averse from restricting individual industrial activity in any direction, it has lately come to realise that the activity of those who overcrowd the land is detrimental to the public welfare. Proposals for restricting this activity by way of limiting the number of houses to the acre, although generally recognised as necessary and reasonable, may naturally enough be expected to look quite otherwise to those whose profit lies in creating overcrowded areas. It is as well, then, that everyone should be in a position to realise how small is the extra profit to be obtained by overcrowding the land compared with the harm done to the community, and how slight a restriction to individual enterprise is entailed by reasonable limitations. In this little publication Mr. Raymond Unwin discusses the financial result of the usual by-law system of development compared with that of a method which, by limiting the number of houses to the acre, establishes a satisfactory proportion between the area built over and that left open for gardens or roads. This he illustrates by diagrams and figures applied to a 10-acre plot, which is shown developed on the two different systems. Attention is drawn to the fact that the limitation of houses to the acre does not by itself achieve the end desired unless it be accompanied by some limitation of their area and cubic contents. The study of the facts and points of view here set forth must, we think, go a long way to convince all those concerned that the hardships entailed on individuals by this necessary measure of public reform are considerably less than is generally supposed.

The small price should help to secure it the wide circulation it deserves.

BOOKS RECEIVED.

AN ACCOUNT OF MEDIÆVAL FIGURE-SCULPTURE IN ENGLAND. By Prior and Gardner. (London: Cambridge University Press. 3*l.* 3s. net.)

THE ETCHINGS OF FRANK BRANGWYN. (London: The Fine Art Society, Ltd. 3*l.* 3s. net.)

THE LAW AND PRACTICE OF RATING. By W. C. Ryde. (London: Butterworth & Co.)

BRASSES. By J. S. M. Ward, B.A., F.R.Hist.S. (London: Cambridge University Press. 1s. net.)

ST. MARY'S COLLEGE, GALWAY.

ST. MARY'S COLLEGE, Galway, opened on August 25, 1912, is at a considerable elevation above the city, and commands a fine view of Galway Bay on one side and of Lough Corrib on the other. Professor W. A. Scott, of the National University, Dublin, was the architect, and Mr. James Wynne, of Dundalk, the builder, the contract price being 13,000*l.* The College affords acommodation for over 100 boarders in addition to the resident College staff, but the wings are so designed as to admit of extension. The building is 240 ft. long, with returning wings of 90 ft. The principal entrance is flanked by four subordinate towers supporting a central tower, which forms the chief feature of the front ornamentation. The towers are in Celtic monumental scholastic style, the central one rising above the roof and containing a water tank holding 20 000 gallons. The building is fire-resisting, the floors and roofs being of concrete. The asphalt work was executed by Messrs. Reinhardt, of Dublin, supported on framework by the Expanded Metal Company, of London, the concrete partitions being made with the machines of the Winget Company, of Newcastle-on-Tyne. The College was founded by the Bishop of Galway, Most Rev. Dr. O'Dea, and is intended to train young men of his diocese for the Roman Catholic priesthood.

St. Mary's College, Galway: Front View.
Professor W. A. Scott, Architect.

ILLUSTRATIONS.

Buckingham Palace.

THE two illustrations of Buckingham Palace are given in connexion with an article appearing on p. 495, which deals with the history of the fabric and with the design for the new front.

New Congregational Church, Fairhaven.

FAIRHAVEN is a fair place by the sea, lying on the Ribble Estuary between St. Annes and Lytham. The site of the Church is within a few steps of the bay, at the junction of Clifton-drive and Ansdell-road. The church is faced externally with "Ceramo," from the Middleton Fire Clay Works, Leeds. Many important buildings in recent years have been erected of this material. Having a matt or vellum surface, it presents a very marble-like suggestion. It is also more enduring than stone, and especially so when used near the seaside.

The plan of the church is in the form of a cross, three of the embayments being utilised in the interior space as transepts, and the fourth as choir and Communion. The ceilings of these and the nave are segmental in shape.

The main entrance is from the junction of Clifton-drive and Ansdell-road, and consists of an open octagonal-shaped vestibule, and above this there is a campanile 90 ft. high. At the northern corner of the church there is another entrance from Clifton-drive; this is a similar portico and vestibule as the central one. This is intended to be used as an entrance to church, church-parlour, and school premises (the latter having been erected some few years ago). This entrance is surmounted by a smaller flanking tower about 50 ft. high.

The organ-chamber, about 17 ft. by 12 ft., is placed at the Communion end and adjoining the vestibule and entrance to the Church Hall in Ansdell-road. At this angle also of the façade there is a corresponding flanking tower to the same height as the one at the northern corner. The choir vestry is at the opposite side of the Communion, and the size is 17 ft. by 16 ft.

The floors throughout are laid in wood blocks, and the Communion, vestibule, and porticoes marble mosaic. The accommodation is for about 500. The church-parlour is placed on the right-hand side of the entrance from Clifton-drive. From this entrance there is a corridor leading to the minister's and deacons' vestries, and also to the present Church Hall.

The buildings have been designed by Messrs. Briggs, Wolstenholme, & Thorneley, FF.R.I.B.A., of Blackburn and Liverpool, and the estimated cost is about 7,500*l.* The contractors are Messrs. Gerrard & Sons, of Swinton, Manchester.

The Orchestral Association.

THE premises we illustrate this week have been designed by Messrs. H. Percy Adams and C. H. Holden, for the Orchestral Association, Ltd., and will be used as a club by the members of the Institution.

In the basement is a large cloakroom fitted with "lock-up" cupboards for the use of members. The ground floor consists of the secretary's offices and a large smoking and refreshment room. The first floor consists of committee-rooms and a large billiard-room; the second floor the reading-rooms. The top floor consists of steward's quarters and kitchen and offices, with lift to every floor.

Internally the woodwork generally is of teak and the walls plastered.

Externally the elevation is faced with grey Reading bricks, flush-pointed, and Portland stone dressings.

The sculptured panel is by Mr. C. Pibworth.

Contractors, Messrs. Sheffield; fireproof floors, Messrs. Homan & Rodgers; electric lighting, General Electric Contracts; heating, Messrs. Berry & Son; locks and fittings, Messrs. Gibbons; casements, Messrs. Hope & Sons.

MEETINGS.

FRIDAY, NOVEMBER 1.

Royal Sanitary Institute.—Mr Edward Willis, F.S.I., on "Sanitary Appliances." 7 p.m.

University Extension Lectures.—Visit to Westminster Abbey. Meet at the Cloisters. 2 p.m.

MONDAY, NOVEMBER 4.

Royal Institute of British Architects.—Opening meeting of session. Presidential address by Professor Reginald Blomfield, M.A., A.R.A. 8.30 p.m.

Royal Sanitary Institute.—Mr. Edward Willis, F.S.I., on "House Drainage." 7 p.m.

The Society of Engineers.—Mr. William P. Durtnall on "The Generation and Electrical Transmission of Power for Marine Transportation." 7.30 p.m.

The London University (Victoria and Albert Museum).—Mr. Banister Fletcher on "Italian Gothic." 5 p.m.

TUESDAY, NOVEMBER 5.

The London University (British Museum).—Mr. Kaines Smith on "Homer and His Age"

Royal Sanitary Institute.—Mr. Henry C. Adams on "Sewerage." 7 p.m.

Institution of Civil Engineers (to be held at the Institution of Mechanical Engineers, Storey's-gate, S.W.).—Address by Mr. R. Elliott-Cooper, the President, and presentation of the medals awarded by the Council.

WEDNESDAY, NOVEMBER 6.

The Royal Archæological Institute.—Mr. C. H. Bothamley, M.Sc., on "The Walled Town of Aigues Mortes." 4.30 p.m.

Nottingham Architectural Society.—Exhibition and criticism of "Constructional Details and Testimonies of Study," by Mr. W. R. Gleave, A.R.I.B.A.

Institute of Sanitary Engineers.—Mr. William Marriott on "Meteorology and Public Health." 8 p.m.

Edinburgh Architectural Association.—Opening meeting. Mr. Francis Bond, M.A., F.G.S., on "French and English Cathedrals." 8 p.m.

THURSDAY, NOVEMBER 7.

The London University (British Museum).—Mr. Banister Fletcher on "Cretan and Mycenean Architecture." 4.30 p.m.

FRIDAY, NOVEMBER 8.

Royal Sanitary Institute.—Mr. Henry C. Adams on "Sewage Disposal." 7 p.m.

COMPETITION NEWS.

A list of current Competitions is printed on page 525.

University Buildings, Dublin.

Twenty-two sets of designs were sent in for the proposed new buildings for University College, Dublin, the competition drawings being adjudicated upon by Mr. Henry T. Hare, F.R.I.B.A. The award is as follows:—First place, Messrs. Doolin & Butler, 27, Dawson-street, Dublin; second place, Messrs. Arthur & H. H. Hill, 22, George's-street, Cork; third place, Mr. T. J. Cullen, 25, Suffolk-street, Dublin. The competition was limited to architects living and practising in Ireland. Mr. R. M. Butler, F.R.I.B.A., was a pupil of and afterwards a partner with the late Mr. W. G. Doolin, F.R.I.B.A., who died in 1902.

Municipal Buildings, Dublin.

The date for sending in designs for this important work is given as January 1, 1913, but it is probable that an extension of time will be arranged. The cost of the proposed buildings is 55,000*l.*, and the author of the design placed first will be appointed to carry out the work on a 5 per cent. basis, exclusive of railway and personal expenses. Premiums of 150*l.* and 100*l.* are offered also. Mr. Albert E. Murray, F.R.I.B.A., is the Assessor.

Hale Town Planning.

The Town Planning Committee of the Hale (Cheshire) Urban District Council, with their Adviser, Mr. Percy D. Lodge, of 3, Ridgefield, Manchester, have made the awards in this competition. The first premium of 50*l.* was awarded to Mr. R. Dann, of Messrs. J. Cheal & Sons, Ltd., Lowfield Nurseries, Crawley, Sussex; and the second premium of 25*l.* to Messrs. Robert Bennett, A.R.I.B.A., and Wilson Bidwell, architects, Letchworth Garden City, Herts. The design coming next in order of merit was that of Mr. John C. Thompson, of the Earle Estate Office, Manchester, and 12, Dunham-road, Altrincham. The Committee present were unanimous in their decision. The plans of the two successful competitors will be used as the basis for the town planning scheme which the Council intend to make application to the Local Government Board for permission to prepare, the first step of which is the settling of the area to be included in the scheme. This question will come up at the next meeting of the Committee, which is to be held at an early date.

R.I.B.A. Competitions.

Next month the drawings for the studentships and prizes of the Royal Institute of British Architects must be delivered, and those who are at work on designs must soon put in the finishing touches. This year competitors may choose their own subject for the Essay Medal with 25 guineas, and the result should be interesting. The Soane Medallion with 100*l.* is offered for the best design for a Terminal Railway Station, and American enterprise in this direction will have influence, we expect, on the schemes submitted. With the Buckingham Palace alterations in mind attention will be directed to the Tite Prize designs for "The Façade of a Royal Palace in a City."

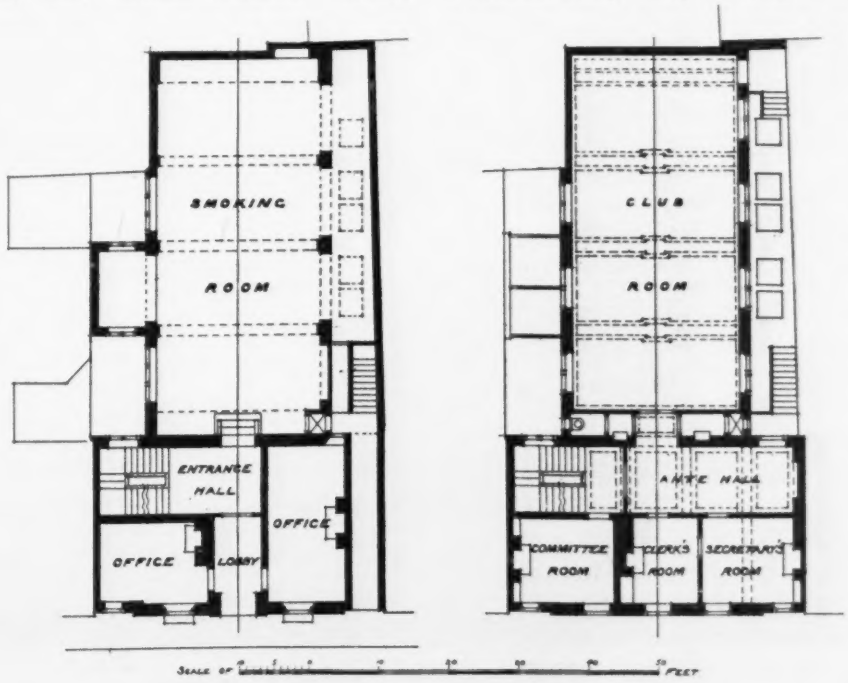
CORRESPONDENCE.

Teachers as Adjudicators.

SIR,—Everyone interested in contemporary architectural education cannot but be delighted with the outstanding success of the system adopted at the Liverpool University School; but is it quite just that studies prepared at this Institution, apparently under the supervision of the Professors, should be accepted as testimonies of study for the R.I.B.A. Final Examination?

For every candidate for the Associateship who comes from the Liverpool School there must be many who are unable to obtain a similar advantage; and it seems to me that it is rather unjust that those other candidates should be handicapped (as they must be) by having to compete with students whose designs are, to all appearances, prepared under the supervision of, if not with the assistance of, such able Professors.

One also notices that Professor Reilly is one of the Committee of Adjudicators appointed for the competitions for the new scholarship at the British School at Rome. Most probably some of Professor Reilly's pupils will be competitors for this valuable scholarship; and, without for one moment attributing the slightest intentional partiality to Professor Reilly, surely it would be more



Premises of the Orchestral Association.
Messrs. H. Percy Adams & C. H. Holden, Architects.

satisfactory to all concerned if this gentleman did not occupy the position of Adjudicator in a competition in which there are, almost of a certainty, many of his own students competing?

If the architectural profession in their own competitions cannot frame arrangements in a manner beyond question, surely it should not complain of outside bodies issuing unsatisfactory conditions. CRICKET.

[*** We think there is something to be said for the points raised by our correspondent, especially with regard to the scholarship of the British School at Rome, and we shall be interested to hear the views of our readers upon them.—ED.]

Demolition of the Old G.P.O.

SIR,—It is with regret that I observe another City landmark being demolished, viz., the old G.P.O., which has always rightly been considered a beautiful piece of architecture, and, without question, is far superior as regards façade, to its successor, which shows no particular genius on the part of its designer.

The writer would be pleased to hear what the Government intend doing with the site, and whether it would not have been possible to reconstruct the interior to suit the purpose of whoever requires the site; and, again, could not the Government have adapted the building to have suited their own requirements, and have saved the country the enormous expense they have been put to in securing the old Christ's Hospital site and the erection of the new buildings—especially when one thinks of the amount of money outlaid in additions and alterations, say, during the last twenty years?

Finally, would it not be possible for the Government to re-erect the façade in a convenient place for the benefit of architectural students, memory of days gone by, and a tribute to genius?

ADRIAN C. S. WHEELER.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring-gardens, S.W., Lord Cheylesmore, Chairman, presiding.

Loans.—The Finance Committee recommended that loans be made to various local bodies as follows:—Hackney Union Guardians, 15,000*l.* for poor law purposes; Islington Borough Council, 8,486*l.* for electricity undertaking, and 11,500*l.* for repaving works; Lewisham Borough Council, 4,000*l.* towards cost of street improvement; Poplar Borough Council, 10,000*l* for electricity undertaking; and Stepney Borough Council, 10,250*l.* for electricity mains.

St. Paul's Bridge.—In a joint report of the Highways and Improvements Committee it was recommended that authority be sought in the next session of Parliament for the construction of a tramway over the proposed St. Paul's Bridge. During a discussion on this matter the Chairman of the Special Committee on the allocation of the cost of street improvements along the tramway routes moved that of the proposed contribution by the Council of 350,000*l.* towards the cost of street improvements at St. Paul's Churchyard, 20,000*l.* should be allocated to the tramways account. The Chairman of the Highways Committee also presented a report pointing out that trams would pass through a subway and be constructed at a cost of 86,000*l.*—the whole of this amount being allocated to the tramways' account, and therefore suggested, on behalf of his Committee, that no part of the cost of widening at the Churchyard should be borne by the tramways account.

The recommendation to allocate 20,000*l.* to the tramways account was carried by a majority of one.

Theatres, etc.—The following drawings have been approved by the Theatres and Music Halls Committee:—Aldwych Theatre—Provision of a movable screen in the dress circle; construction of an enclosure for projecting arc lamps. Bear-street, Leicester-square (Cinema de Paris)—Alteration to the seating. 28-32, Denmark-hill—Provision of a motor generator enclosure. Hackney Empire, Mare-street—Alterations to the electrical installation. Hamilton Hall, South-road, Forest-hill—Arrangement of the new portion of the supper-room and the new block of dressing-rooms. 2, Holloway-road and 4, Highbury-crescent—Ventilating arrangements; amendment of the sanitary arrangements. 44, Mile End-road—Arrangement of the lighting and heating installations. Morley Hall, Mare-street, Hackney—Provision of a motor generator enclosure. Mornington House, Canonbury-lane—Provision of a balcony. Clapton Rink and Cinema, 137-147, Lower Clapton-road—Alterations to seating arrangements, etc. 226, Commercial-road (late Yiddish Theatre)—Provision of a cinematograph chamber. 396, Mile End-road—Alterations. Rotherhithe Town Hall—New lavatories and alterations to cloakroom. Royalty Theatre—Provision of electric fan. 56 and 58, Rye-lane—Alterations.

Drawings have been submitted for cinematograph theatres as follows:—By Messrs. Deakin & Cameron for a cinema to be erected at the junction of Great Western-road and Hormead-road, Paddington; by Messrs. J. S. Quilter & Son, for a cinema to be erected at 213, King-street, Hammersmith; and by Mr. F. T. Verity, for a concert hall to be erected at 316-320, Regent-street, W.

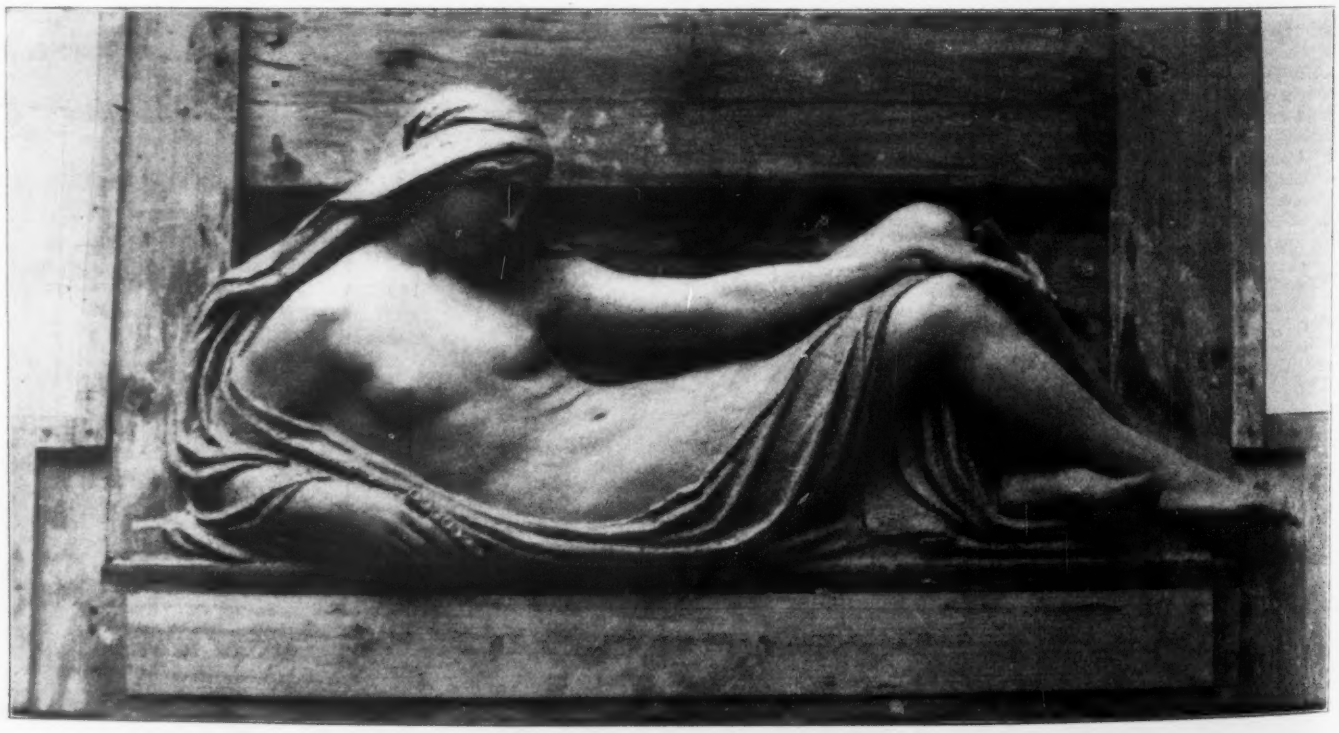
FIFTY YEARS AGO.

From the *Builder* of November 1, 1862.

Prevention of Decay in Timber.

MESSRS. YORK & CO. are circulating a translation of an "Essay on the Prevention of Decay in Timber," by a new system of carbonisation, written by Mons. de Lapparent, Inspector General of Timber for the French Navy, and which system, it appears, is extensively adopted at the present moment in the French Government dockyards for their line-of-battle ships, as well as by railway companies both in that country and Spain for the preservation of their sleepers, &c. The advantage of putting the butt of a gate-post, for example, into a fire before placing it in the earth, is perfectly well known in England. The difficulty found in effecting this charring has prevented a more extensive use of the process.

*** Any method devised for the preservation of timber must be directed in the first place either towards eliminating the sap or destroying its vitality. Any treatment affecting the surface of timber only offers but a temporary impediment to the action of moisture. The sap may be soaked out by immersion in water, or the spores may be destroyed by a high temperature. It is possible that, in the process referred to, by which the surface was thoroughly charred by a contrivance of Bunsen burners, the heated products of combustion permeated the wood to a greater depth than the portion actually charred, thereby rendering such parts sterile. But it is improbable that any such action went very far, and a later report on M. de Lapparent's system was not satisfactory. The process that has for long now held the field consists in forcing creosote into the pores of the timber at high pressure and at an increased temperature. In fact, nothing less than a complete permeation of the timber by some antiseptic medium can be accepted as a reliable preventive. The application of heat may only result in the drying up of the sap, leaving it eager to absorb moisture again. The mere dipping of the end of a post in some preparation before burying it—a proceeding that is very popular—cannot be trusted to act as a deterrent to decay, unless care has also been taken to ensure the fact that the spores within the timber are dead.—ED.



Euterpe.

Mr. Charles Pibworth, Sculptor.

Figure in Portland stone on the new premises of the Orchestral Association. (*See Inset Plate.*)

BVCKINGHAM PALACE

VIEW TOWARDS THE MALL AS PROPOSED

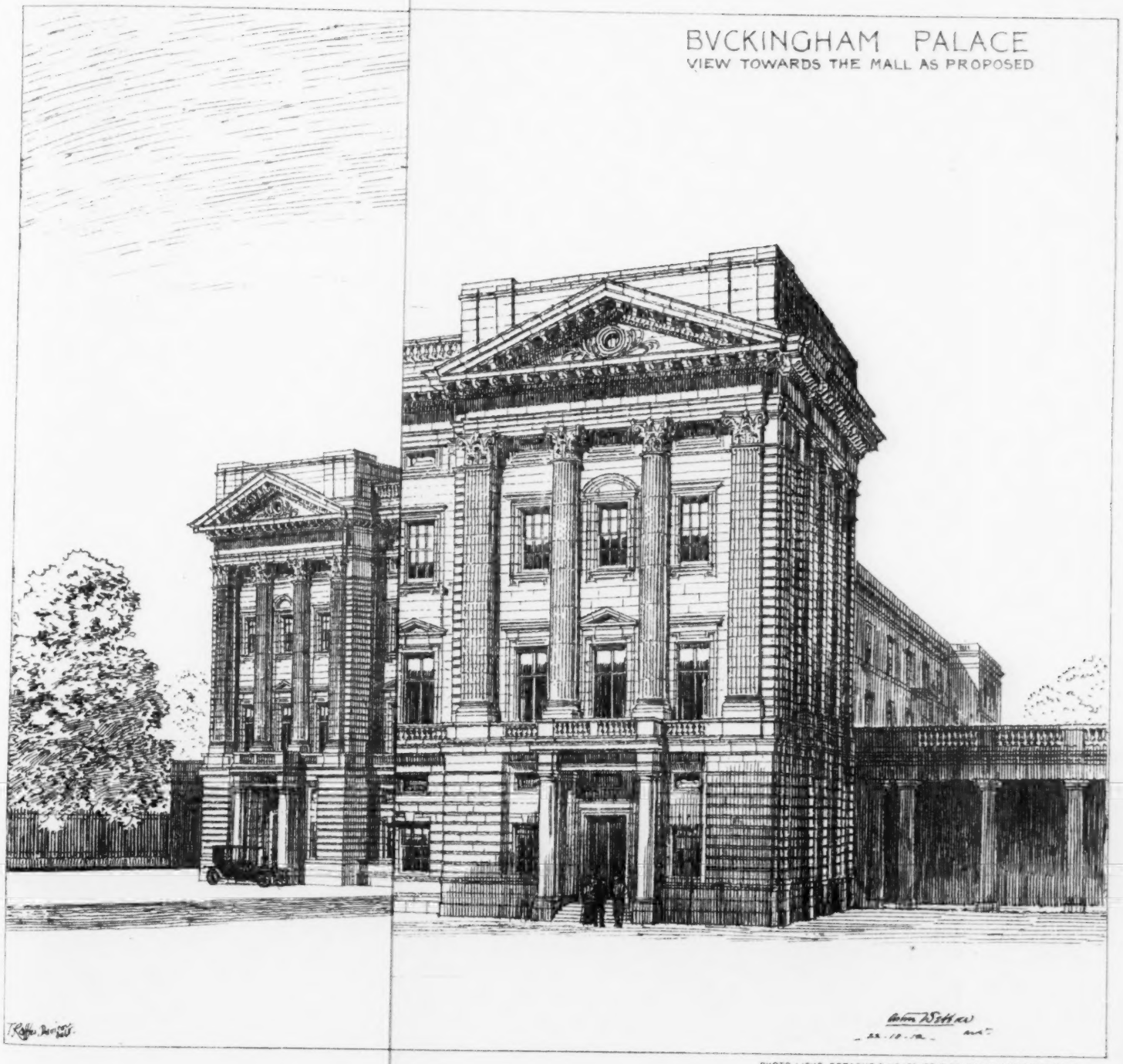


PHOTO-LITHO SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

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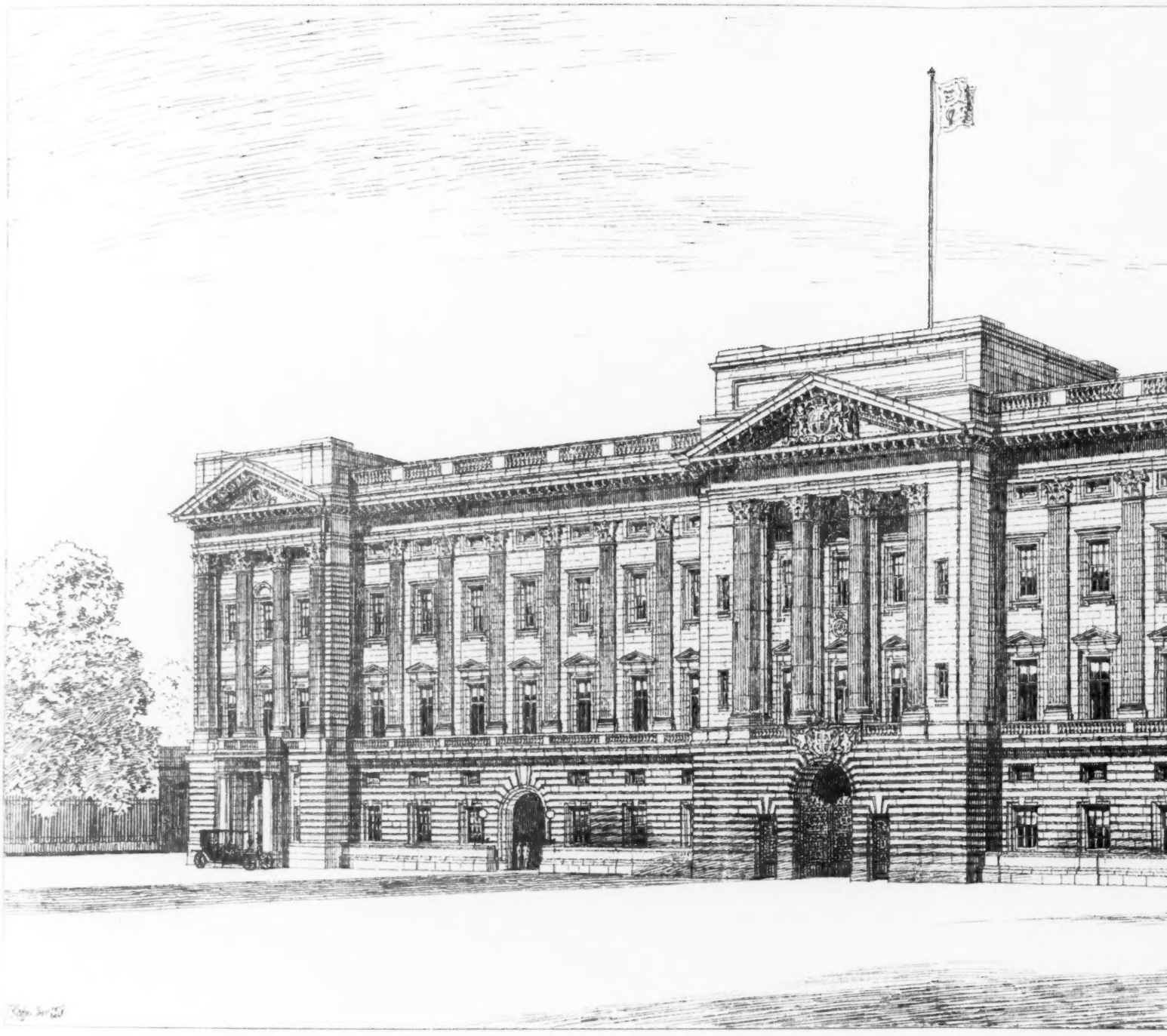

BUCKINGHAM PALACE. DESIGN FOR NEW FAÇAD

BVCKINGHAM PALACE
VIEW TOWARDS THE MALL AS PROPOSED

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GN FOR NEW FAÇADE.—Sir Aston Webb, C.B.,R.A., Architect.

BUCKINGHAM. PALACE.

PROPOSED. REFACING. OF. EAST. FRONT.

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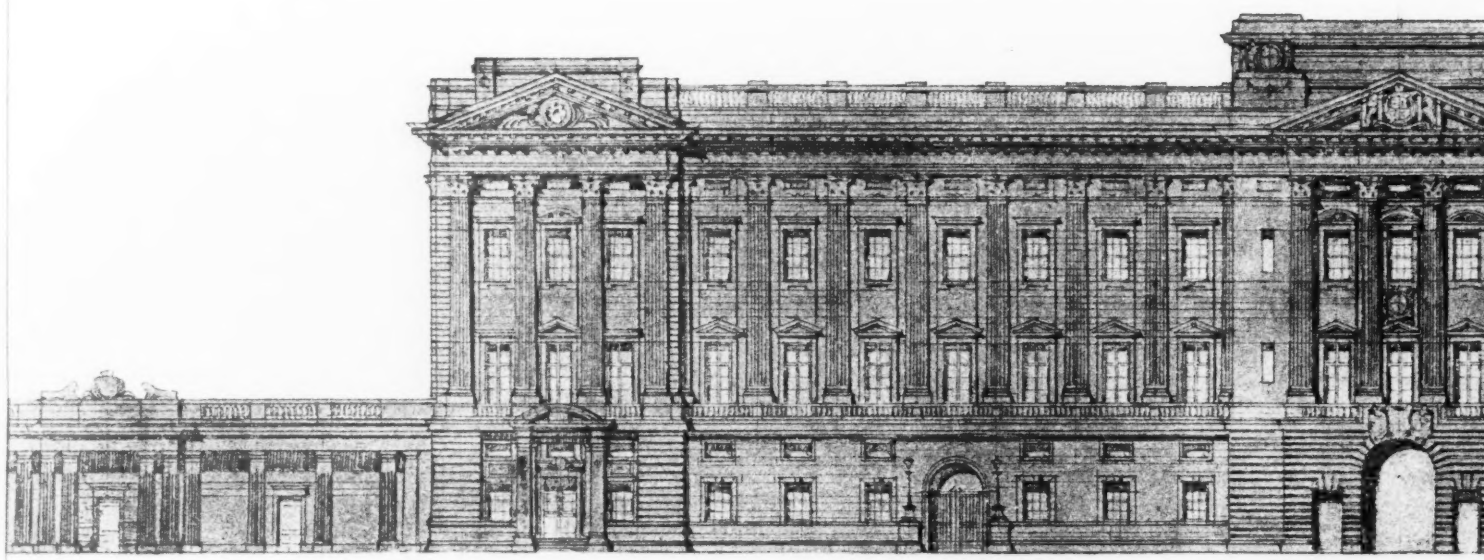
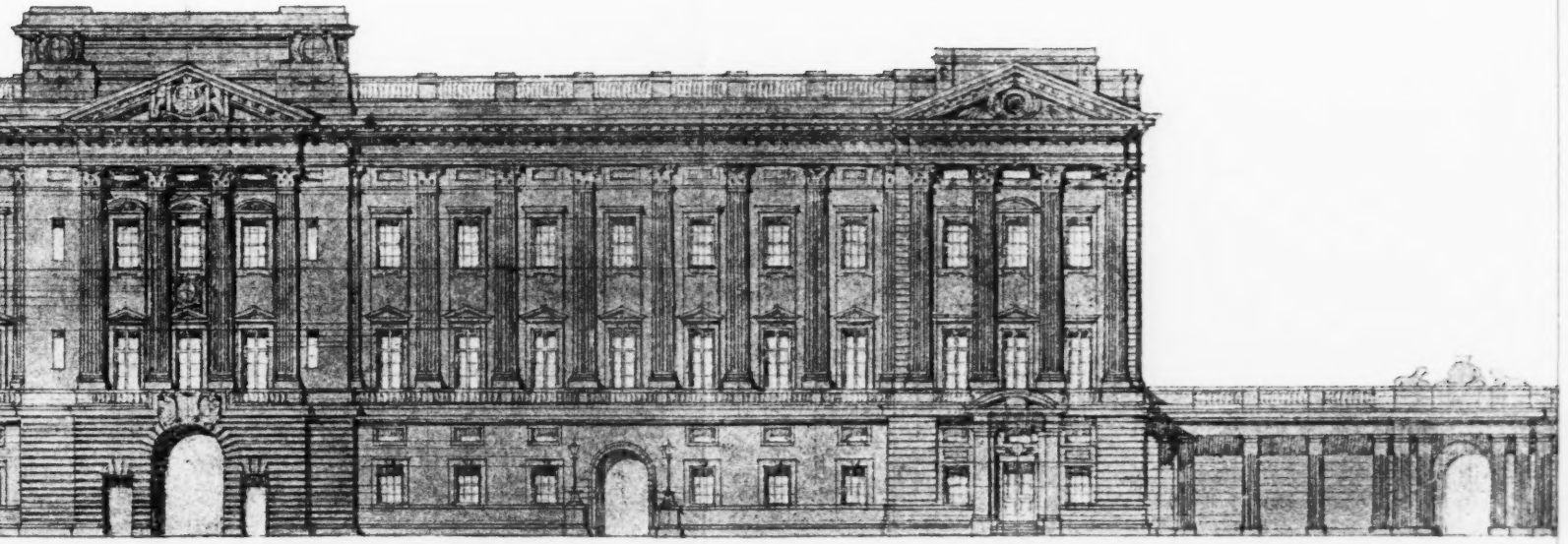


— FRONT · ELEVATION · TOWARDS · THE

BUCKINGHAM PALACE. DESIGN FOR NEW FAÇADE.—From the A



EVATION · TOWARDS · THE · MALL · AS · PROPOSED · —

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W FAÇADE.—From the Autograph Drawing by Sir Aston Webb, C.B.,R.A., Architect.

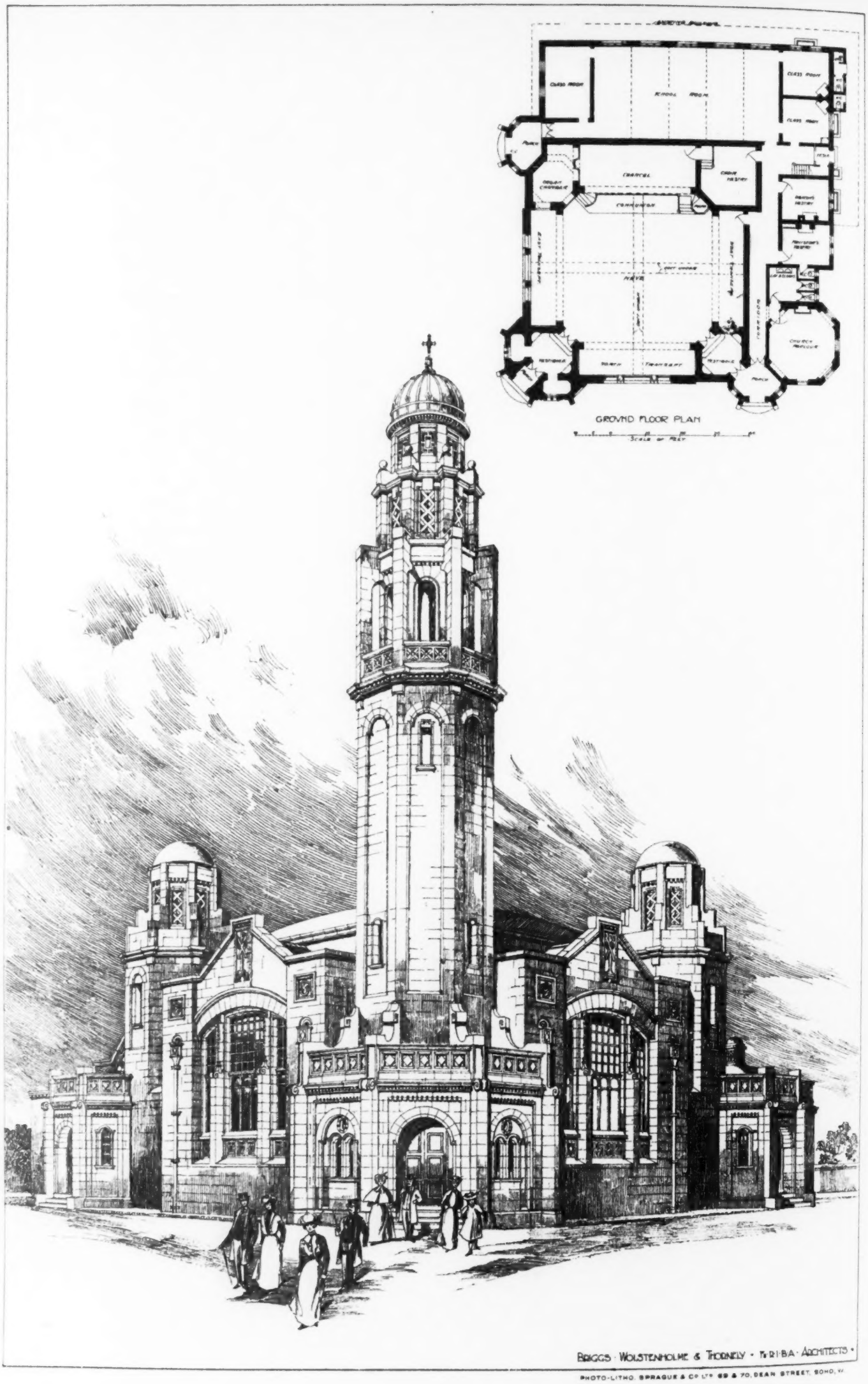


PHOTO-LITHO. SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

NEW CONGREGATIONAL CHURCH, FAIRHAVEN.—Messrs. Briggs, Wolstenholme & Thornely, FF.R.I.B.A., Architects.

PHOTO-LITHO. SPRAGUE & Co LTD 69 & 70, DEAN STREET, SOHO, W.

PREMISES OF THE ORCHESTRAL ASSOCIATION, ARCHER STREET.—Messrs. H. Percy Adams & C. H. Holden, Architects.

MONTHLY REVIEW · *of* · CIVIC DESIGN.

Broadway, Winnipeg, in which the New Parliament Buildings will be placed.

TOWN PLANNING AT WINNIPEG.

THE Town Planning Conference held during the summer in Winnipeg, which was attended by the Governor-General and lectured to by the leading authorities on civic design in the Dominion, should give a considerable impetus to the movement for a general improvement and extension plan for that city itself. We are interested to learn that, in addition to exhibits lent by the Garden Cities and Town Planning Association, a special feature of this Congress was the scheme prepared by the Winnipeg Town Planning Commission.

The citizens of Winnipeg are nothing if not optimistic, and they are fully aware of the great future which lies before their city. It may confidently be anticipated, therefore, that any scheme they put forward will express their confidence in its ultimate expansion into the great central city of Canada, which, if it rivals Chicago in size, will never, we hope, rival it in monotony.

We understand that the plan put forward by the Commission provides for a civic centre, with the Parliament buildings, Government offices, Law Courts, etc., grouped round a new City Hall. This scheme, we presume, takes into account the new Parliament buildings about to be erected by Mr. Simon on a site facing Broadway—a view of which is given—and bounded on the other side by the Assiniboine River.

The fact that this town is not only a thriving and rapidly-growing commercial centre, but is also the seat of a provincial government, gives it a dual character, and suggests the possibility of two centres, with a connecting link for the civic and the provincial authorities. The combination of the two in an architectural composition at the same centre will present an extremely interesting architectural problem, and we shall be interested to see how it is treated at Winnipeg.

We publish also a plan of the city in 1909, which gives an idea of its general lay-out and of the manner in which it has developed from the original fort of the Hudson Bay Company at the junction of the Red River and the Assiniboine River. Owing presumably to these rivers and to the presence of old Indian trails to Fort Garry, the main thoroughfares have not been laid out at right angles, so that although the filling in of the plan is on the usual gridiron pattern, the main skeleton suggests some possible adaptation or modification of the radial system in any future developments of the central area.

Anyone who has been confronted with the difficulties and drawbacks entailed by the huge bulk of Greater London will realise that in a city size, beyond a certain limit, is not a thing to strive for and to be proud of.

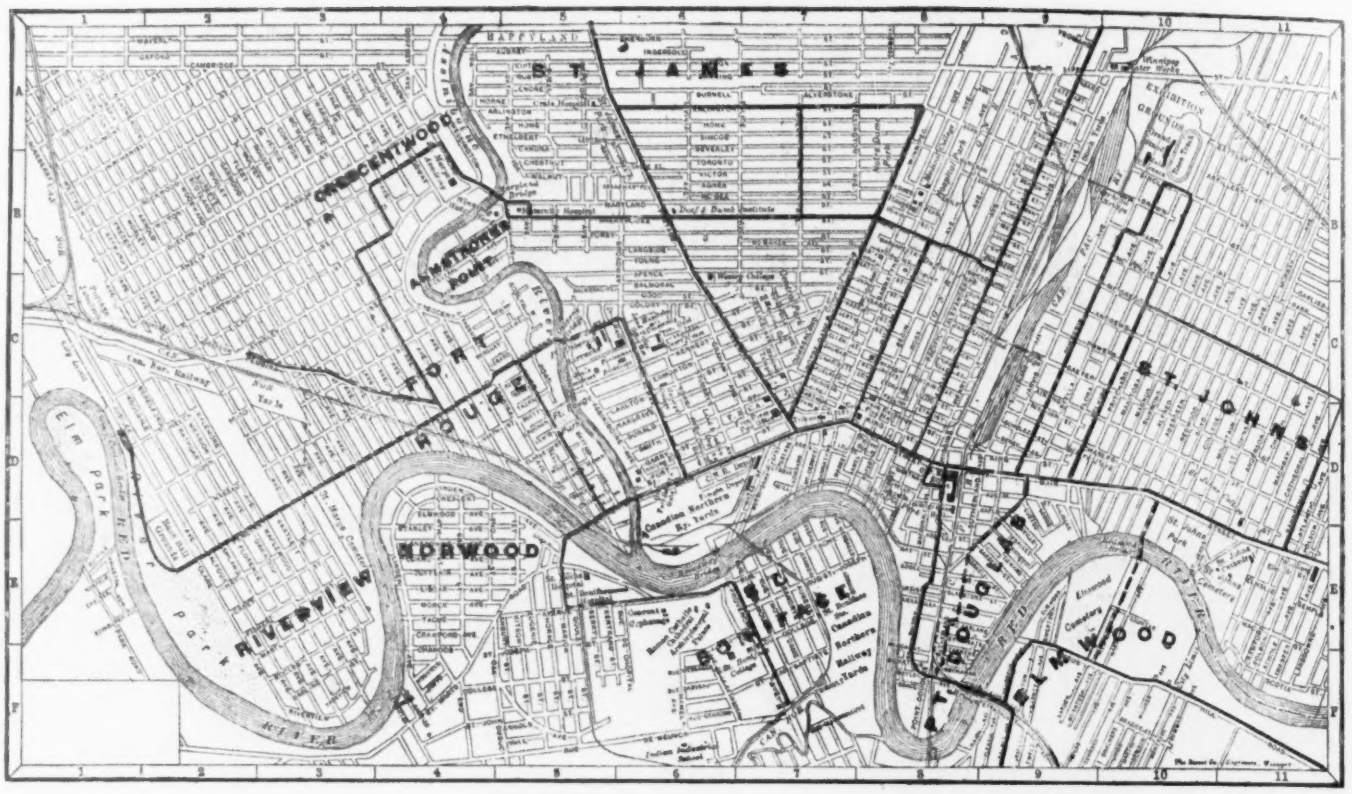
It is to be hoped that in the case of Winnipeg the garden city idea will be borne in mind, and a green girdle acquired before it is too late.

THE CITY DEVELOPMENT PLAN.

LONDON still lacks its city development plan. That there is a growing need for such a plan is shown almost daily as fresh improvements are contemplated, improvements which, to judge from the past, will be left but half complete, lacking the most important part, co-relation to the city as a whole. Examples will occur to everybody—the Aldwych and Kingsway fiascoes, the discreditable petty warfare of the powers that be about the termination of the Processional Way, the St. Paul's Bridge question—there is no need to prolong the list, all these point insistently to the necessity for some carefully co-ordinated plan upon which the city may base its development and growth.

The idea is not by any means new, but in the general apathy which has reigned until recently it has been overlooked and its importance unrecognised. Imperfect appreciation of the purpose and aims of such a plan have caused a regrettable bias against it in some quarters, and an impression, quite unfounded, exists that the idea is visionary and could not be carried out in practice. That this is false the following quotation from the report of the New York City Improvement Commission (1904) will show:—"A comprehensive plan must necessarily anticipate the future growth of the city for many years to come and be so framed as to meet all possible requirements, so far as they can be reasonably foreseen, and be so designed that all its parts shall be consistent the one with the other, and form a homogeneous whole, in order that any improvements hereafter made may be entered upon with reference to the accomplishment of a definite purpose." That is the definition of the city development plan, and emphasis is laid on the gradual nature of the change to be brought about in the city, and also upon the necessary harmony of the projected changes and their relation to the city as a whole.

The majority of the larger American cities have realised the importance of this method and have formed advisory boards, composed



Map of Winnipeg. (*See page* 509.)

of men of standing in the community, whose interests or attainments fit them for the difficult task, and these boards have gathered materials and information of all kinds bearing on the city—historical, social, and topographical. The result of their deliberations is published often as a handsome volume, illustrated by the foremost draughtsmen of the day), and forms the base upon which to plan any improvement. The advantages of such a course are obvious.

That such a plan is needed in London to-day cannot be denied, and the necessary machinery should be easily set up—an advisory board, with a few assistant experts, whose united labours would inspire confidence. The civic authorities, too, with the advantage of a clearly defined line to follow, and would be able to guide the evolution of their city with little, if any, hardship to those most nearly concerned. It is surely time now that something on the lines indicated above was done, as we have been long enough content to muddle through.

THE ESSENTIALS OF A GARDEN CITY.

OWING to the numerous paragraphs that are continually going the round of the daily Press, under the heading of "A New Garden City," whenever a few acres of building land are to be developed, the Secretary of the Garden Cities and Town Planning Association sometime ago asked to be allowed to define the essentials of a garden city as distinct from a garden suburb, or from ordinary development. He states them as follows:—

"1. That before a sod is cut or a brick is laid the town must in its broad outlines be properly planned with an eye to the convenience of the community as a whole, the preservation of natural beauties, the securing of the utmost degree of healthfulness, and proper regard to communication with the surrounding district.

2. That in the town area the number of houses should be strictly limited, so that every dwelling should have ample light and air, with a suitable garden, and that public recreation ground and open space should be provided generously.

3. That the town area should for ever be surrounded by a belt of agricultural and park land, so that while in the centre the urban problem is being dealt with, the rural portion, which should be the larger part of the estate, may be available for farms and small holdings, in order that the smallholder and market gardener may have a new market direct to hand for the sale of produce.

4. That the return on capital should be limited to, say, 5 per cent., any profit above that amount being applied to the estate itself for the benefit of the community.

5. That the town should be not merely residential, but also commercial and industrial, that provision should exist for taking the worker and his work away from the crowded centres into the fresh air of the country district, where not only should the land be cheaply obtainable for the employer, but the worker should have a comfortable cottage at a convenient distance from his labour."

"It is therefore," he continues, "essential that the land should be of considerable area, and its development should be in the hands of one controlling body, which, in Mr. Howard's scheme, should have for its ultimate object, not the making of huge profits, but the improvement of the conditions of life for all who live on the area. The estate should be somewhere from six to ten square miles in area, and in order to give effect to the desire for the combination of town and country about two-thirds should be reserved for the rural area."

As he further points out, neither a "garden suburb" nor a garden village, such as Bournville, fulfils these conditions, for they make no attempt to deal with the root evil of rural depopulation, towards which the garden city acts as a preventive not as a palliative.

It certainly is most desirable that terms should be accurately defined, and that the fundamental principles underlying the garden city movement should not be forgotten. Although it is no doubt annoying to those who have been propagating this idea for the past thirteen years to find the name used by every speculator who is anxious to draw attention to his building scheme, yet there should be some comfort in the proof it affords of the growing popularity of the movement.

The same difficulty has arisen in other countries, notably in France, where, if we may believe the speculators' announcements, garden cities are to be found in profusion on the outskirts of all the large towns.

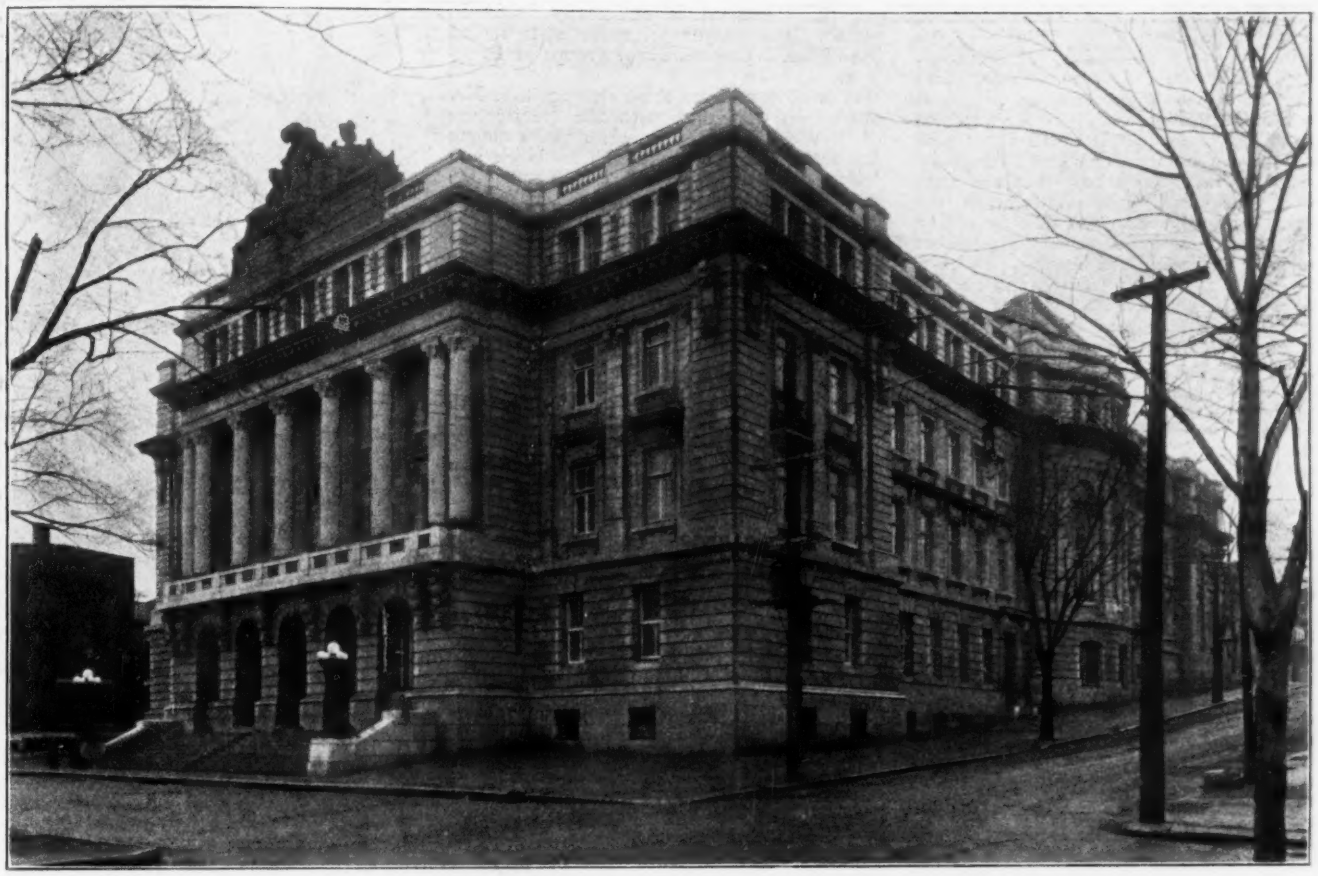
It is difficult to see how the abuse of the term is to be prevented, but at any rate the public can be kept informed as to the salient features of a garden city, and not be left under any misapprehension.

MONTREAL.

IN a previous number (August 4, 1911), in the course of some notes on recent work in the city of Montreal, attention was called to the extensive additions to the equipment of the city as regards schools, and in the present issue we give some further illustration of these. The census of 1911 pretty clearly reveals some of the pressing necessities which have been at the back of recent building activity. The city proper numbered a population of 267,730 in 1901, whilst the census of the current year places it at 466,197, showing a larger increase than in any other city of the Dominion. With its suburbs Montreal has now a total population of over 520,000. The province of Quebec also shows a larger increase than that of any other of the older provinces, due no doubt to the steady development of great natural water powers in various industries, and this increasing industrial development, with corresponding mercantile organisations, is what has called into being the Ecole des Hautes Etudes Commerciales de Montreal, or Commercial High School.

The building is advantageously placed on the side of one of the city squares, the Place Viger, opposite the terminal of the eastern system of the Canadian Pacific Railway. Limestone only is employed in the facades. Internally the woodwork in doors and dadoes is chiefly oak and the floor is birch. The chief feature internally from an architectural point of view is the entrance hall, with fluted Roman Doric pillars and a wide staircase of oak with wrought-iron railing of scroll-work. Besides classrooms and laboratoies the building contains a commercial and industrial museum the exhibits in which are in process of acquisition. The architects are Messrs. Gauthier & Daoust, of Montreal. The courses in this institution are in the French language, about two-thirds of the population of the city being of French descent.

On the other hand, the Montreal Technical and Commercial High School in Sherbrooke-street is under the direction of the Protestant Board of School Commissioners, and education is here given in English. The building is of red brick and yellow limestone. There is a large assembly hall in the rear. The architect is Mr. A. F. Dunlop, of Montreal, who has been successful in one of the most important open competitions held in the city in recent years, that for the Sir William Dawson School on the St. Joseph Boulevard. The general practice of American schools is here very rigidly observed as regards type of classrooms and their relation to adjoining cloak-rooms in every case. A large combined assembly-room and playroom is provided in the basement. Fire escape stairs are provided within the building, as ought to be more commonly practised in Canada when snow and ice are apt to render external stairs dangerous, especially for children, in winter. The classroom windows are of the type which is now almost absolutely demanded—the continuous mullioned window. The new health by-law for the city of Montreal runs:—"The windows of class and study rooms, dormitories, and infirmaries shall be so arranged that the rays of the sun may penetrate directly into the interior of the room. The glazed area of the windows in each class and study



Ecole des Hautes Etudes Commerciales, Place Viger, Montreal.

Messrs. Gauthier & Daoust, Architects, Montreal.

Technical and Commercial High School, Sherbrooke Street, Montreal.

Mr. A. F. Dunlop, Architect, Montreal.

room shall be equal to at least one-fourth the area of the floor of the room." In the exceptionally clear atmosphere of Montreal, almost immune from fogs and blessed with high percentage of bright sunshine, which in winter is still further intensified by the reflection from the snow, one-fourth of the floor area is equivalent to a much larger area in England. When it is remembered, too, that the thermometer in Montreal often stands below zero for days and even weeks at a time it will be realised that such lighting conditions entail considerable expenditure in heating. The new health by-law is not yet finally adjusted, but in the present connexion it may be of interest to quote the requirements for ventilation:—"The number of pupils to be admitted to a study or class room shall be so limited that each of them and the teacher or master shall have a minimum of 150 cubic ft. of air, and the total area of the floor space shall be 15 sq. ft. at least per head." Mechanical devices must be provided capable of supplying 1,800 cubic ft. of fresh air per hour per person during occupation of the rooms; air not to be introduced at a speed of more than 200 ft. per minute at not less than 65 deg. Fahrenheit. It is also usual to aim at a certain percentage of humidity—in the neighbourhood of 40 per cent., the necessity for this arising from the circumstance that air at zero can only sustain a small percentage of humidity; when, therefore, its temperature is raised its extreme dryness has the effect of drawing off the moisture from all substances in the rooms, doors shrink, flooring boards open, furniture is injured, and the influence on human health is made apparent in injury to the membranes of the breathing passages and lungs.

The Academie Marchand has been recently built under the care of the Catholic Board of School Commissioners for French-speaking children in Berri-street in a fairly closely-built and old quarter. The architects are Messrs. Marchand & Haskell, of Montreal. The lower stories and dressings are in limestone, the three upper stories are in pale buff brick.

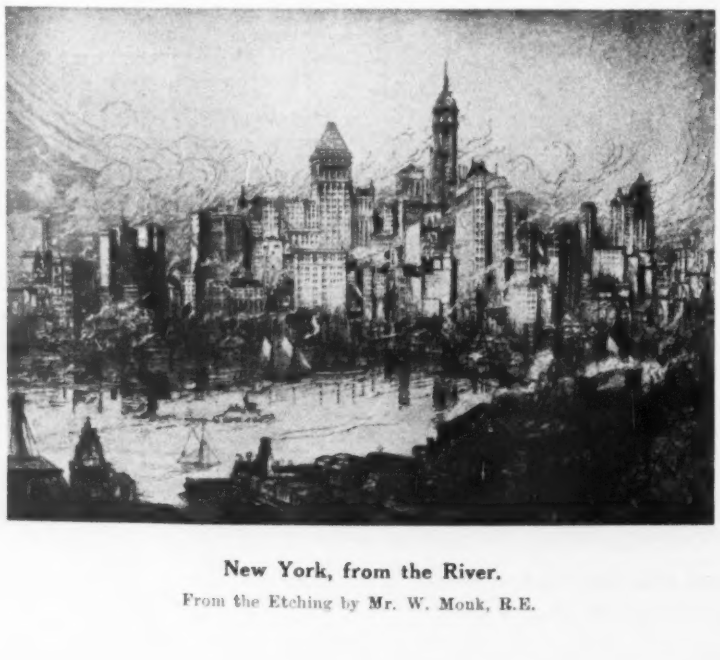
ETCHINGS OF NEW YORK.

MESSRS. ACKERMANN & SON, now of New Bond-street as well as of Regent-street, have inaugurated their season by publishing four etchings of New York subjects by Mr. W. Monk, R.E. We have obtained permission to illustrate two of them, namely, "Wall Street" and "New York from the River." The other two are "Fifth Avenue" and "S. Patrick's Cathedral."

It may be said at once that Mr. Monk, whose work is well known to readers of the *Builder*, has represented the various buildings with due consideration to architectural exactitude and scale. The scenes are not shown in reverse, as is the case with so many original etchings of the present day, and the artist has avoided the modern tendency to blur over or leave out altogether the difficult features of the chosen subjects. The etchings, however, are neither microscopical in detail nor hard in general effect; enough has been put in to satisfy the architectural critic, yet the treatment is sufficiently broad to attract those who expect an artist to realise the pictorial possibilities of groups of buildings.

It is obvious from these etchings that Mr. Monk was impressed with the architecture of New York, and the series ranks among the artist's best achievements in black and white. The effective and descriptive plate of "New York from the River" is a masterpiece of drawing and lighting. The buildings on the island, "down town," are seen from the Brooklyn side, the Singer Tower rising highest, with its forty stories. The dock scenes give movement to the composition, and the foreground "occurs" happily.

The other small illustration represents Wall-street, with Trinity Church in the distance. The Bankers' Trust building, with its pyramid-shaped roof, is skilfully rendered, and the ravine-like effect of the street, with the scale indicated by the human element, is suggested without undue emphasis on the perspective.



New York, from the River.

From the Etching by Mr. W. Monk, R.E.

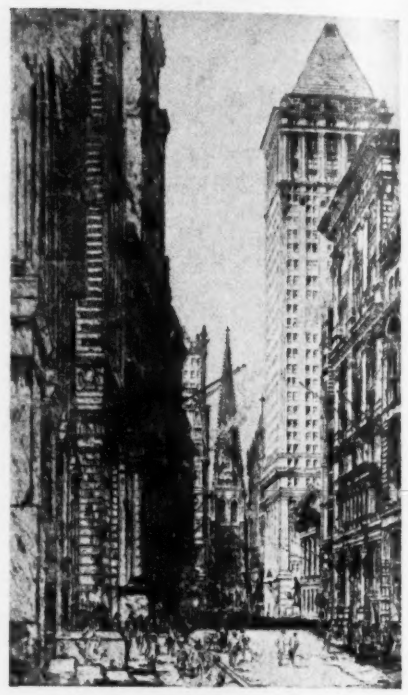
WHOSE WORK IS TOWN PLANNING?

OUR contemporary, the *Surveyor and Municipal and County Engineer*, publishes a letter calling attention to the alleged "danger of architects usurping the legitimate functions of municipal engineers in regard to town planning." An editorial note which accompanies this letter points out that the municipal engineer's "special knowledge of existing evils, his practical experience with the design, construction, and maintenance of roads and sewers, and his knowledge of building gained through his duty of supervising the plans and works of architects, alike specially qualify him to deal with questions of town planning." The opinion is then expressed that "town planning is eminently a matter in which those who are by their daily work experienced in town development are well qualified to take a leading part."

With this opinion, as a general statement, we cordially agree, and if this is all our contemporary is concerned about it is only forcing an open door. Architects themselves admit it, and have pointed out that, as under present conditions the first work to be done is generally the lay-out of new roads, the municipal engineer is bound to take a leading part in all practical work under the present Act.

But to gladly concede to the municipal engineer his "leading part" in his own sphere of activity is a very different thing to conceding him what our contemporary's correspondent calls "his true work of town planning, construction and maintenance." For this seems to concede him everything—which is, we imagine, more than any reasonable municipal engineer would wish to claim.

Town planning is a wide and complicated subject which has only recently entered the field of practical politics in this country. At present there is no one man, or class of men, competent to deal with every aspect of it.



Wall-street.

From the Etching by Mr. W. Monk, R.E.

It requires combined effort. Naturally enough, we do not yet see our way clear in this respect. We have not yet discovered how each of us may best contribute his mite of knowledge or skill to the common stock. It is all to the good, therefore, that the matter should be discussed in a spirit of mutual respect; but it seems to us as unnecessary to press the claim of the architect as it is to deny that of the engineer. We want the special knowledge of the one to supplement the special skill of the other.

But whatever claims may in the meanwhile be put forward by one or another to play the "leading part"—and everyone, whether architect or engineer, has a natural weakness for this—one thing is certain: the question will settle itself regardless of the feelings of either. Those will lead who are the most competent to lead, and we imagine that, by whatever name they may be called in the future, they must possess the gift of design and be able to approach the subject from an architectural standpoint.

CIVIC DESIGN NOTES.

City Tramway Projects. THE London County Council will renew in the next Parliamentary Session their application for powers to extend the existing tramways from Charles-street, in Farringdon-road, as far as (but not beyond) Ludgate-circus, and, if consent is given thereto by the Corporation of the City and Holborn Borough Council, they will seek for statutory authority to widen Charterhouse-street and Farringdon-road. The new double line, 2 furlongs 8 chains long, will cost about 18,000*l*. The Council have also prepared plans of their proposed system of electrical traction and mode of construction in regard to the extension of the tramways from the City boundary through Bishopsgate to Liverpool-street. This short line, 2 furlongs 1 chain in length, from Norton Folgate to near Liverpool-street, has been agreed upon between the Council and the Corporation, and when the latter resolved last year to widen Bishopsgate between the City boundary and Brushfield-street, the Council consented to pay one-half of the cost conditionally upon the Corporation not opposing the contemplated running of the tramway-cars to Middlesex-street. The estimated cost for construction and equipment upon the underground conduit system for this double line is nearly 10,000*l*.

County or Borough Improvement? THE dispute between the London County Council and the Stepney Borough Council as to who should widen Cable-street is another instance of the muddle into which London administration has fallen. Stepney contends that this improvement should be treated as a county improvement, as, Cable-street being really a main

approach to Tower Bridge and also to the Docks, most of its traffic is through traffic, not local. Also it claims that a widening here would relieve the through traffic in main arterial routes outside its jurisdiction. We have not yet seen the reply to these representations, but if a properly constituted authority existed, with a properly thought out general scheme, such discussions, we imagine, would have no need to arise. The differences between the London County Council and the Road Board as to the value of a western approach road to London illustrate the same point.

The Model Village Criticised. A CORRESPONDENT of the *Daily News* in visiting model villages in Yorkshire, where open spaces and large back-yards in common have been provided instead of the usual back and front garden to each house, was struck by their neglected appearance, and concludes that, owing to the lack of privacy, in actual working the system seems to have proved a discouragement to the dweller who wishes to show a "proper pride" in his residence.

"If you plant a few flowers," a housewife complained to me, "as likely as not the children from the other houses come and spoil them. And I do wish I had my own backyard! What's the use of trying to be tidy if you've got untidy neighbours sharing the yard?"

He also found that some dull-looking red brick and slate cottages were preferred to those of the model village.

"They're better than these in some ways," I was told. "Their baths are in the scullery." That, it appears, is a real recommendation to the collier, whose wife doesn't approve of his passing through the house before he can remove the dust from his body.

A Boston Improvement. THE plan for the improvement of Copley-square, Boston, as prepared for the city by Mr. Frank A. Bourne, does away with that part of Huntington-avenue which diagonally crosses Copley-square. This will provide a quadrangle nearly 400 ft. square between the Public Library, Trinity Church, and the Copley Plaza Hotel, and extend the line of Trinity Church out to Boylston-street, so that the corner left by the obliteration of Huntington-avenue could be converted into a garden park. Boston would then have a public square worthy of comparison with the great squares of other cities. It is intended to place a large column like the Nelson monument in London in the centre of the square.

Western Approach Road, London. THE Road Board have signified their approval of a proposal preferred by the Heston and Isleworth Urban District Council to divert the route of the contemplated road near Osterley Park by turning it southwards to effect a junction with the present main road at Spring-grove, and continuing it thence north-westwards along the track originally intended. It is also proposed to turn the new route away from the main road at Chiswick, so as to pass round Kew Station and then to re-enter the main road at Pears' Fountain. The Improvements Committee of the London County Council have decided to recommend the Council not to proceed with the undertaking having regard to the conditions attached by the Road Board to their offer of a grant, 875,000*l.*, amounting to half the computed cost of the improvement.

Traffic Authority for London. WE are interested to note that the General Purposes Committee of the London County Council reports in favour of the establishment of a London Traffic Board, but that an amendment is to be moved declaring that such a Board would be opposed to all principles of local government, and that the County Council should have the duties and powers of traffic authority now performed by other authorities. A motion is also to be moved in favour of legislative proposals which will secure for the legislative authorities of London and Greater London the control of street traffic corresponding to the control possessed by the City of London and by other municipalities in England, including powers to determine what roads should be reserved for private residences. These proposals and counter-proposals involve, no doubt, questions of policy with which we are not directly concerned, but we are concerned to obtain for London, however it may be brought about, such simplification and unity of administration as seems necessary if any adherent general plan is to be evolved. That a town should be competent to control its own traffic seems at first glance a self-evident proposition—how much more therefore a county? But at the same time there may be reasons connected with the National or Imperial aspect of London as the capital city which, at the moment, escape us. This seems to be the inherent difficulty with London. As the capital city she is not mistress in her own house from the civic point of view.

Planning of Delhi. MR. KING asked the Under Secretary of State for India whether the report of the Committee appointed to advise on the site planning of the new Delhi will be published shortly; what steps will be taken to carry out the promise that the planning and designing of the public buildings of the new Dehli will be considered with the greatest deliberation and care; and what means are being taken to consult the best Native Indian opinion and those practically experienced in Indian building as to the style and character of the proposed new buildings in Delhi. Mr. Montague replies that the Committee have not submitted any report that could be conveniently published. When their inquiries are completed and their final recommendations submitted the Secretary of State will consult the Government of India as to publication. No decision has yet been come to with regard to the matters mentioned in the second and third parts of the question, but they are engaging the closest attention of the Government of India and of the Secretary of State.

National Housing and Town Planning Council's Irish Report. WE have received the Report of a deputation sent by the National Housing and Town Planning Council to investigate the working of the Irish Labourers' Acts. This Report is stated to have removed all doubts which the members of the Committee may have had as to the economic wisdom of asking for State help for the housing of the poorest classes. We hope to deal with this Report at greater length in a future issue.

Royal Housing Commission for Scotland. THE vital importance of the housing question is again recognised by the appointment of a Royal Commission to inquire into the housing of the industrial population of Scotland, with special reference to the rural districts and the housing of miners and agricultural labourers. This Commission will, no doubt, advise legislative action in due course, but in the meanwhile there is much that might be done by administrative action under the existing law. In such matters as housing it is the energetic and whole-hearted administration of the law by local authorities which seems to be the important thing.

The Scapa Society. FROM the annual report of the Scapa Society, hitherto known for much useful work as the National Society for Checking the Abuses of Public Advertising, we gather that the most important event of the year has been the framing of the Hampshire By-law, under the Advertisements Regulation Act, 1907. The terms of this by-law enact that "no advertisement shall be exhibited on any hoarding, stand, or other erection visible from any public highway (whether carriageway, bridleway, or footway), and so placed as to disfigure the natural beauty of the landscape." The important point is that the Secretary of State has approved a by-law whose terms are of general application, not requiring the scheduling of each particular place that it is desired to protect. Five other County Councils, we learn, have followed this example with by-laws of equal or even greater scope. Although it is generally held that the words "visible from any highway" would apply to railways, rivers, and public spaces, the by-laws of Gloucester, Surrey, and Somerset specifically include them.

The Scapa Society is to be congratulated on good work well done and may be wished that increase of membership it desires to enable it to extend its sphere of usefulness.

Totterdown Fields Estate. THE development of the Totterdown Fields Estate, Tooting, has been practically completed. The estate, which was purchased in 1900 for 44,238*l.*, now comprises 1,261 dwellings. The expenditure on the estate has amounted to 395,931*l.*, and the financial prospects are considered satisfactory. Not only does the accommodation provided supply a real need, but the action of the County Council in purchasing and developing the estate has done much to promote the development of a district where additional suburban housing was urgently needed.

Edinburgh as the Seat of a Parliament. WITH reference to the Government Offices that will take the place of the prison erected in 1808 on Carlton Hill, Edinburgh, the Secretary for Scotland was asked whether provision should be made for the housing of a Scottish Parliament in Edinburgh, whether he had considered the propriety of utilising Carlton Hill for that purpose? The reply was made that this site would be fully occupied by the permanent offices.

If the present political trend towards federation and devolution is to result in a Parliament for Scotland it is as well that the possibility should be foreseen and provided for however remote it may seem at the moment. The *Builder*, in view of the possibility of Imperial Federation, has already put forward a suggestion for the development of Central London as the capital of the Empire, and it would be interesting to see something of the same sort attempted for Edinburgh as the seat of a national Parliament for Scotland. In any event, the inhabitants of Edinburgh cannot scrutinise too closely all proposals for dealing with such an oustanding site as Carlton Hill. Any buildings erected there should be entrusted to the most capable designer available and not left to the ordinary routine of a Government Department.

Railways and Town Planning. AT the Local Government Board inquiry, held to consider a town-planning scheme for East Birmingham, an important question of principle was raised by the railway companies, who contend that the scheme should not apply to any land vested in them for the purposes of their railways. The land in question, some 1,400 acres, has good communication with the central area, but no communication from north to south, the railway line forming a barrier. This defect is proposed to be remedied by the construction of new roads. The position taken up by the Birmingham Council is that so long as the use of the railway land is confined to the purposes of permanent way they have no wish to interfere; but if the companies begin to erect buildings upon it, such as engine-sheds, goods yards, or workmen's dwellings, they ought to come within the provision of the scheme. It is understood that the companies were disposed to consider the position as far as the dwelling-houses are concerned. We are not aware that the property of railway companies, like that of the Government, is expressly excluded from the provisions of the Act. The position needs to be carefully watched, as the railways are not exactly famous for their consideration for the amenities, and there is little doubt that, in the future, the alteration or removal of their permanent way will be the crucial point of many a town-planning scheme.

Regent-street Rebuilding. MR. FELL asked the representative of the First Commissioner of Works if he would state what are the questions submitted to the Committee appointed to consider the proposed rebuilding of Regent-street and the Quadrant; and if it was made a condition of the rebuilding that the height of buildings to be erected shall not exceed that of the present structures, so that the sunshine and light and air of the street shall not be interfered with. Mr. Benn said the terms of reference were as follows:—"To consider the design to be adopted for completing the rebuilding of the Quadrant, Regent-street, due regard being had to æsthetic considerations, commercial requirements, and the interests of the land revenues of the Crown." The point raised in the last part of the question would no doubt be considered by the Committee.

THE BUILDING TRADE.

LAND VALUATION:
THE FINANCE ACT.

ON June 20 it was announced by the Chancellor of the Exchequer that an inquiry was to be instituted into the administration of the Finance Act, and it was understood that this was to be proceeded with at once. We are not aware that any steps have so far been taken to appoint a Committee, but on the 16th ult. a question was put to the Chancellor of the Exchequer in the House as to whether under the terms of the reference it would be competent for the Commission to inquire whether the true site value of agricultural land was being ascertained and credit being given for all improvements by owners and their predecessors. The building trade are especially interested in very similar points in connexion with building estates, but on July 5 we pointed out that under the terms of reference—"To inquire into the working of the valuation prescribed by sect. 26, subsect. 1, of the Finance Act, 1910, and to report whether any modifications of the machinery carrying out the valuation are necessary, and, if so, what modifications"—it seemed that questions such as the above would not be the subject for inquiry. In his answer to the above question the Chancellor is in agreement with the view we expressed, as he stated that a Committee of experts such as had been proposed would be confined to considering questions of administration—*i.e.*, whether the Act had been fairly administered; but that if questions of policy were involved, such as the above, the Committee would have to be differently constituted. It is important to note that Mr. Lloyd George made the further statement that he had never stated that the Government were opposed to an inquiry which would embrace questions of policy involving an amendment of the Act, but that the Opposition ought to make up their minds as to the kind of inquiry they desired.

There can be no doubt that an inquiry of the widest kind is that which is required, and that the terms of reference as originally framed were far too narrow to serve any useful purpose, and therefore we trust that the offer now made by the Chancellor of the Exchequer will at once be accepted.

The Act has now been sufficiently long in force for any defects in its working to have been fully grasped and any unexpected results affecting injustice to be considered. We may add that where new principles are applied, as was the case in the Finance Act, it is almost inevitable that defects in their practical application should be disclosed and call for amendment, and we trust that the former reference may now be cancelled and that a full inquiry into the working of the clauses affecting land, both as regards principles and administration, may be instituted without delay.

DISPUTES IN THE BUILDING TRADE.

THE Industrial Council resumed its sittings at Winchester House, St. James's-square, on the 29th ult., to hear evidence upon the settlement of disputes in the building trades of London, Lancashire, Cheshire, and North Wales. Sir George Askwith (Chief Industrial Commissioner) presided.

Mr. Frederick Higgs, Vice-President of the National Federation of Building Trades Employers and ex-President of the London Master Builders' Association, was the first witness. With regard to the scope of the Association in London, he said that they numbered 137 members, who were the chief contractors of London. During 1910 their members paid 1,692,000*l.* in wages to their operatives. They had agreements with their workers as to wages, conditions, demarcation, and the settlement of disputes. Recently they made a fresh agreement with stonemasons and carpenters. Bricklayers were also awaiting a settlement. The agreements embodied a conciliation clause. There were Conciliation Boards and various arrangements for settlements. In case of failure there was a right of appeal to the Board of Trade to appoint an arbitrator. He thought the decision of the arbitrator should be final. His general experience was that the agreements had been observed by both sides. The conciliation rule which was brought into force was the result of negotiations after long periods of squabbling from 1890 to 1900. The rule came into active operation about 1905. He had heard representatives of the workmen saying that Conciliation Boards were not much use in cases where the decisions were against the workmen, or where they could not agree. There had been several cases of breaches of agreement by employers, and he had generally found that a censure from the Association had been effective. He favoured financial penalties for the enforcement of agreements. If these were imposed on the organisation it would fall on the individual offender.

By Mr. J. M. White: He did not object to compulsion if it could be properly applied to make non-associated competitors pay the same rate of wage as members.

Replying to Sir T. Ratcliffe Ellis, witness said the position ought not to be that a workman should be labelled by being asked, when seeking work, whether he was a unionist or a non-unionist. "My view," he added, "is, ask him if he can lay a brick, and if he can, give him a job."

Mr. Clynes, M.P.: As the result of agreements come to, one effect has been an improvement generally in the quality of work done, and in value and durability?—Possibly; I think it might be so.

Witness said some big firms of contractors in London were not members of the Association. He had suggested that architects should agree to give orders only to builders in the Association for the purpose of inducing employers outside to come in.

In the course of further examination witness stated that he was not in favour of the non-unionist escaping penalties which would fall upon organised workmen of the same trade. He would like to see them organised, just as in his own Association he should like to see more power exercised over outside employers.

Sir Hugh Bell: Do you favour adopting the course of not employing a man unless he produces a union ticket?—I could not prevent it. I can see the man's point of view.

The question is, whether you would be willing to take the same course in regard to men as you suggest architects should take in regard to yourselves—that is to say, to give work only to builders belonging to your Association?—I could not do that.

Mr. Thomas Arthur Locan, of the Lancashire, Cheshire, and North Wales Master Builders' Association, complained of the way in which the Manchester trade had been affected by sectional sympathetic strikes, and favoured the national agreement being more absolute. He would attach monetary penalties to any breach of agreements. Agreements should be arrived at voluntarily between the parties concerned, and when they desired that they should be enforced by law they should be sanctioned by law.

Mr. George Dew, London County Council (Secretary of the London Building Industries Federation), was of the opinion that once an agreement defining wages, conditions, and hours had been arrived at mutually between employers and the trade unions, all employers in the particular industry should pay those rates and observe those conditions. He was strongly in favour wherever possible of adjusting all disputes by amicable means. His Federation was in favour of the enforcement of industrial agreements in regard to rates of wages and conditions of labour. When an agreement had been arrived at between the representatives of the workmen and the employers in any given district it should be an offence for any employer to enforce conditions that were less favourable than those agreed to. Much harm was often done by contractors from low-wage districts, who brought cheap labour into London and took an unfair advantage of the trade. The law should help to enforce agreements mutually arrived at, either by process of recovery of wages from the employers in the wrong or by withholding support from the workman or workmen in default.

The Council adjourned.

The results of the ballot on the question of amalgamation of existing trade unions in the building trade has been a disappointment to the promoters of the scheme. Twenty unions were at first committed to the principle, but the final returns show that only ten seem prepared to go forward with the project, and even here the support accorded is not, it is stated, calculated to inspire much hope of final success. The detailed results of the voting are:—

	Membership.	For.	Agst.
Amalgamated Carpenters and Joiners	77,600	18,690	10,523
Operative Bricklayers	24,000	4,371	763
United Operative Plumbers	12,000	1,606	291
Stonemasons	9,000	1,269	61
National Operative Plasterers	8,000	1,778	310
National Builders' Labourers	5,000	756	2
United Builders' Labourers	3,000	2,369	40
Manchester Unity of Bricklayers	2,000	427	61
Street Masons and Paviors	2,000	152	104
London and Provincial Painters and Decorators	1,000	223	1
Totals	143,600	31,541	12,176

It will be seen that the statutory two-thirds majority of the total membership has only been obtained in the case of the United Builders' Labourers, one of the smaller unions. A further Conference of the unions set out above will be held in London on December 3 to further consider the scheme, and the promoters are hopeful that other unions will agree to join before that date.

BRICKLAYERS' WAGES, MANCHESTER DISTRICT.

THE agreement arrived at between the Master Builders' Association and the Operative Bricklayers' Society as to rates of pay, etc., in Manchester, Salford, and District, will come into operation on November 1. Under the agreement, the workmen receive an advance of ½d. per hour, bringing the rate up to 10½d. an hour. During the summer months the hours will be reduced by five, making forty-nine and a half hours a working week, but the winter week of forty-one and a half hours remains unchanged. There will be advanced rates for men engaged in chimney building, and for sewer-work the new minimum is 1s. per hour.

There are revised rates for travelling expenses to jobs; all apprentices are to be legally bound; provision is made for the admittance of representatives of the union to jobs; and the demarcation of work is defined.

The agreement also provides for improved accommodation for men engaged on jobs and for the giving of notice to men about to be discharged. It applies to a radius of five miles from Albert-square, and will remain in operation until May 1, 1915.

The reduction of hours during the summer months will increase employment by 5 per cent.—*Manchester Evening News.*

GENERAL BUILDING NEWS.

ALL SAINTS' CHURCH, GOODMAYES.

This church is being erected at a cost of 10,065*l.* from the designs of Mr. P. E. Allen, architect, of Tunbridge Wells. The external facings of the buildings are in grey brick with Portland stone dressings, and the contractors are Messrs. Dove Brothers, of Islington.

WESLEYAN HALL, BRADFORD.

Messrs. W. J. Morley & Son are the architects for the new Prospect Wesleyan Mission Hall, which is to be erected to provide accommodation for about 1,000 people. In addition to the large hall there will be several smaller rooms and a kitchen, and the estimated cost of the work is 6,000*l.* The contractors are:—Messrs. Brown & Son (masons), Messrs. Wilkinson & Dawson (joiners), Mr. H. Wilman (plumber), Messrs. Hill & Nelson (slaters), and Mr. T. C. Calvert (painter).

TOWN HALL, CLARE.

A new Town Hall is to be erected on the site of the old Corn Exchange at a cost of about 1,050*l.* From designs submitted in competition that of Mr. Beaumont, architect, has been chosen, which provides for a hall 46 ft. by 32 ft., with a gallery and a large room below the hall. The contract has been secured by Messrs. Grimwood & Son.

THE SOUTHWARK BRIDGE CONTRACT.

At the last meeting of the Corporation of London an agreement was sealed between the Bridge House Estates Committee and Sir William Arrol & Co., Ltd., for the execution by the company of works in connexion with the removal of Southwark Bridge and erection of a new bridge for the sum of 278,148*l.*

MANCHESTER MUSEUM EXTENSION.

An extension of the Manchester Museum in connexion with Manchester University has just been opened. Accommodation is provided in the extension for the collection of Egyptian antiquities and also for geological and anthropological specimens. The architect is Mr. Paul Waterhouse.

TRADE NEWS.

Under the direction of Mr. Arthur J. Stedman, Lic.R.I.B.A., Farnham, the "Boyle" system of ventilation (natural), embracing Boyle's latest patent "air-pump" ventilators and air-inlets, has been applied to Old Bourne Schools, Bourne, Farnham, Surrey.

The new Infectious Diseases Hospital, Thornton, Fife, is being supplied with Shorland's warm-air ventilating patent Manchester stoves and patent Manchester grates by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

WATER SUPPLY, ABERTILLERY.

A new reservoir is to be built for the Abertillery and District Water Board at a cost of 261,000*l.* from the plans of Messrs. Baldwin Latham, engineers, and the work is to be carried out by Messrs. Underwood Brothers. The reservoir will hold 376,000,000 gallons of water, and will serve a population of 80,000. The height of the dam will be 146 ft., with foundations of 26 ft., and the length will be 974 ft. The water will be carried in 12-in. pipes, of which there will be 30 miles. Mr. J. D. Latham is the resident engineer.

INTERNATIONAL BUILDING EXHIBITION, LEIPZIG, 1913.

The Directors of the Exhibition inform us that the closing date for exhibitors (originally fixed for October 1, 1912) has been extended to January 1, 1913. Thus firms who intended to participate, but who hitherto have omitted to send in their application, still have an opportunity of securing the space they require. Space has already been booked to the amount of a million marcs.

LEGISLATION IN THE BUILDING TRADE.

AT a meeting of Glasgow Technical College Architectural Craftsmen's Society, held in the College on the 25th ult., Mr. A. H. Purdie presiding, an address was delivered by Mr. William H. Baxter on "The Effect of Recent Legislation in the Building Trade." In order, he said, to understand how steadily oncost charges and legislative burdens were increasing, it was necessary to go back and examine some of the more troublesome Acts of Parliament and the effect of such as the Factory Acts, Workmen's Compensation Acts, and National Insurance Act. The stringency of the first two had been steadily increasing, and, without a doubt, the National Insurance Act would ere long become more burdensome. It was clear that employers had not realised the effect of such legislation in piling up oncost charges, and the percentage of these was demonstrated; also methods whereby definite allowances could be allowed for in ordinary contracting. Discussion followed.

APPLICATIONS UNDER LONDON BUILDING ACTS, 1894 to 1909.

AT Tuesday's meeting of the London County Council the following applications under the London Building Acts were dealt with. (The names of the applicants are given in parentheses):—

Lines of Frontage and Projections.

Camberwell.—Erection of a shop front at No. 290, Camberwell-road, Camberwell (Messrs. Lyne & Sons for Messrs. H. & C. Davis, Ltd.).—Consent.

Camberwell, North.—Building on the western side of Wells-street, Camberwell, to abut also upon the southern side of Blackbridge-street (Messrs. Hichisson & Co., Ltd.).—Consent.

Hampstead.—Projecting wooden entrance to a house on the northern side of St. Cuthbert's-road, Hampstead, next to Shoot-up-hill (Messrs. Rix & Wilkins).—Consent.

Islington, East.—Illuminated sign in front of No. 292, Holloway-road, Islington (Mr. C. Gardner).—Consent.

Lewisham.—Erection of shops on the western side of High-street, Lewisham (Mr. H. H. Dartnall).—Consent.

Limehouse.—Erection of a one-story building at No. 264, Burdett-road, Limehouse (Mr. D. P. Hayworth for the Bow-common Estate).—Refused.

Marylebone, West.—Erection of an oriel-window and two balconies at No. 394, Oxford-street, St. Marylebone (Mr. G. Thrale Jell for Mr. F. Dixon).—Consent.

Peckham.—Erection of a building on the northern side of High-street, Peckham (Mr. J. F. Wetherell).—Consent.

St. George, Hanover-square.†—Erection of a projecting shop front and balcony at No. 28, New Bond-street (Mr. M. E. Collins for Messrs. A. C. F. & W. M. Hill).—Consent.

Strand.—Iron and glass shelter at the entrance to Nos. 1 and 2, Coventry-street and No. 1, Wardour-street (Messrs. Emden, Egan, & Co.).—Refused.

Wandsworth.—Erection of bay-windows and porches at a proposed building on the northern side of Becmead-avenue, Streatham, abutting also upon the eastern side of Garrads-road (Messrs. Marsh & Wiles for Mr. C. N. Murphy).—Consent.

Width of Way.

Limehouse.—Erection of a building at Hough's Wharf, on the northern side of Narrow-street, Limehouse (Mr. W. M. Knight for Mr. R. Hough).—Consent.

Mile End.†—Erection of additions at No. 381, Mile End-road, at less than the prescribed distance from the centre of the roadway of Lawton-road (Mr. F. E. Harris for Mr. I. Zeligman).—Consent.

Rotherhithe.—Erection of a stable building and an open shed upon a site on the eastern side of Braddon-street, Rotherhithe, abutting also upon Seven Step-alley (Mr. J. M. Kennard for Mr. A. H. Foster).—Consent.

Width of Way, Lines of Frontage, and Projections.

Kensington, South.—Erection of a circular iron staircase and a balcony at No. 38, Queen's-terrace-mews, Kensington (Messrs. Hayward Brothers & Eckstein, Ltd.).—Consent.

Lewisham.—Erection of a building upon a site at the rear of No. 60, Loampit-hill, Lewisham, to abut upon the southern side of Beaufort-gardens (Mr. H. G. Fennell).—Consent.

Lines of Frontage and Construction.

Hackney, Central.—Retention of wooden fowlhouses of a temporary character at the rear of No. 21, De Beauvoir-square, Hackney, next to Mortimer-road (Mr. E. J. Shelly).—Consent.

Paddington, South.—Temporary shed in front of No. 10, Craven-hill, Paddington (Messrs. T. W. Heath & Son).—Consent.

Width of Way, Projections, and Construction.

Kensington, North.—Erection of an iron and glass covered way at Nos. 3, 5, and 7, Chepstow-place, over the public way of Chepstow-mews, Paddington (Mr. E. J. Stubbs for Messrs. Bradley & Sons).—Consent.

Line of Fronts, Space at Rear, and Projections.

Deptford.—Water-closets and wooden staircases at the rear of Nos. 58 to 78, even numbers only, inclusive, Whitcher-street, Deptford (Mr. W. J. Clayton for the South-Eastern Railway Company).—Consent.

Lewisham.†—Buildings on the northern side of George-lane, and the eastern side of Roxley-road, Lewisham (Mr. P. Roche).—Consent.

Frontage and Space at Rear.

St. Pancras, South.†—Erection of projections to a building to abut upon Hunter-street and Handel-street, St. Pancras (Mr. A. Davis for the London Housing Society, Ltd.).—Refused.

Width of Way and Construction.

Dulwich.—Lean-to shed at the premises of Messrs. J. F. Chiverall & Co., at the rear of Nos. 87 and 89, Camberwell-grove, Camberwell (Mr. J. F. Chiverall).—Consent.

Width of Way and Space at Rear.

Poplar.—Erection of four cottages on the southern side of Morant-street, Poplar (Mr. T. J. Bee for Mr. W. J. Kemp).—Consent.

Width of Way, Space at Rear, and Height of Buildings.

Battersea.—Buildings on the northern and southern sides of a street for foot traffic only leading from St. John's-hill, Clapham Junction, to Clapham Junction Station (Messrs. Trehearne & Norman for Mr. W. J. Fryer).—Consent.

Space at Rear and Alteration of Building.

Marylebone, West.—Erection of an addition at the rear of No. 83, Gloucester-place, St. Marylebone (Mr. J. Hudson for Mr. W. Gadd).—Consent.

Alteration of Buildings.

Chelsea.—Erection of an additional story to the back addition of No. 17, Moore-street, Lennox-gardens, Chelsea (Messrs. Douglas Young & Co. for Miss M. L. Talbot).—Consent.

Hampstead.—Erection of a bathroom addition at the first-floor level of No. 2, Harley-road, Hampstead (Mr. A. W. Moore for Mr. C. E. Marshall).—Consent.

Islington.—Water-closet addition at the rear of No. 159, Hornsey-road, Islington, at the second-floor level (Messrs. W. J. Smith & Co.).—Consent.

Wandsworth.—Enclosing walls of less thickness than required by the said Act to cellars at Nos. 6 and 6A, Waldron-road, Wandsworth (Messrs. Holloway Brothers (London), Ltd.).—Refused.

Cubical Extent.

City of London.—Additional cubical extent in connexion with the erection of a printing office and factory building abutting upon Shoe-lane and Plum Tree-court, City (Messrs. J. W. Beaumont & Son).—Consent.

Kensington, North.—Erection of a building upon the site of Nos. 3, 5, and 7, Chepstow-place, Kensington, exceeding 250,000 cubic ft. in extent (Mr. E. J. Stubbs for Messrs. Bradley & Sons).—Consent.

Cubical Extent and Construction.

Paddington, South.—Erection of iron and glass roofs over loading-platforms, external iron staircases and galleries, and iron enclosures to lifts at the premises of Messrs. W. Whiteley & Co., Ltd., Queen's-road, Bayswater (Messrs. John Belcher, R.A., and J. J. Joass for Messrs. W. Whiteley & Co., Ltd.).—Consent.

Uniting of Buildings and Construction.

St. George, Hanover-square.—Erection of an iron staircase at No. 7, Dover-yard, and the uniting of No. 43, Dover-street with Nos. 5 to 7, Dover-yard, Piccadilly (Mr. F. Newman for Messrs. A. Webster & Co.).—Consent.

Cubical Extent, Uniting of Buildings, and Construction.

Mile End.—Additional cubical extent in respect of a proposed division to be used for cask washing and drying at the Anchor Brewery, Mile End-road; the formation of openings, fitted with steel rolling shutters; and the erection of the cask washing shed in reinforced concrete (Messrs. W. Bradford & Sons for Messrs. Charrington & Co., Ltd.).—Consent.

The recommendations marked † are contrary to the views of the Metropolitan Borough Councils concerned.

PROJECTED NEW BUILDINGS IN THE PROVINCES.*

ABERNANT.—Houses for the Aberdare Urban District Council; Messrs. John Morgan & Son, Ltd., builders, Pendarren-street, Aberdare.

Ayr. — Diphtheria block at Heathfield Hospital (2,700*l.*); Mr. J. Young, Surveyor, Town Hall, Ayr.

Banbury.—Proposed rebuilding of Britannia Works for Messrs. Samuelson & Co., agricultural and milling engineers.

Bangor (Ireland).—Baths and convenience, Pickie (3,000*l.*); Surveyor, Council Offices, Bangor.

Barry.—Shelters on Promenade (1,200*l.*); Mr. J. C. Pardoe, Surveyor, Council Offices, Barry.

Basingstoke. — Fire-station, Brook-street (700*l.*); Mr. E. Reginald Phipps, Surveyor, Town Hall, Basingstoke.

Beverley.—Proposed school (3,500*l.*); Vicar, St. Mary's Church, Beverley.

Birkenhead.—School, Pilgrim-street (800 places); Mr. Robert T. Jones, Town Hall, Birkenhead.

Birmingham.—Tramway depôt, Highgate-road (30,000*l.*); Mr. A. Baker, Tramways Manager, Town Hall, Birmingham.

Birnam.—Rebuilding Birnam Hotel; Messrs. Henry & Maclennan, architects, 7, South Charlotte-street, Edinburgh.

Blackburn. — Wesleyan Mission-buildings (20,000*l.*); Messrs. Bradshaw, Gass, & Hope architects, 19, Silverwell-street, Bolton.

Blackpool.—Picture theatre, Dickson-road; Mr. H. Wade, architect, Birley-street, Blackpool. Rebuilding Sunday-school for Trustees, Wesleyan Church, Adelaide-street, Blackpool.

Booker.—Adminstrative block at isolation hospital (527*l.*); Messrs. C. H. Hunt & Son, builders, Station Works, High Wycombe.

Bury.—Alterations and additions to Holy Trinity Church (1,500*l.*) for the Vicar.

Bury St. Edmund's.—Six houses, near Northgate-street, for the Guildhall Teoffment Trustees; Mr. Sidney Naish, architect, The Croft, Bury St. Edmund's.

Cardiff.—Offices, Cardiff Dock; Mr. H. Bugden, architect, 95, St. Mary's-street, Cardiff.

Cawood (Selby). — Alterations to chapel (1,080*l.*) for the Trustees.

Cheadle. — Additions to Harthill, The Crescent, for Dr. John H. Godson; extensions to works of Messrs. William Mosley, Ltd., bleachers, for the Bleachers' Association, Ltd., 4, Norfolk-street, Manchester.

* See also our list of Competitions, Contracts, etc., on another page.

Cockermouth.—Proposed new building for the Board of Management, Cockermouth Nursing Home.

Crompton.—Warehouse at Higher Clough Mills for the executors of Mr. J. Milne, cotton spinner.

Cullompton.—Unitarian chapel (900*l.*); Mr. R. M. Challice, architect, 14, Bedford-circus, Exeter; Messrs. E. Labdon & Sons, builders, 1, Fore-street, Cullompton.

Denbeath.—Residence adjoining hospital for the Wemyss Coal Company, Ltd., East Wemyss, Fifeshire.

Doncaster.—Proposed addition to Yorkshire Institute for the Deaf and Dumb (4,900*l.*) for the Governors.

Dundee.—Additions to buildings, Dens-road and Main-street, for Messrs. Harry Walkers & Sons, Ltd., jute goods, etc., manufacturers, Caldrum Works, St. Salvador-street; additions to Lilybank Foundry for the Caledon Shipbuilding and Engineering Company, Ltd., Kembach-street, Dundee.

Dunston-on-Tyne.—Proposed large steelworks for the Stobie Steel Company of Sheffield; works for the Team By-Products Coke Company, Ltd., Milburn House, Newcastle-on-Tyne.

Eastbourne.—Plans have been passed as follows:—Garage, Prideaux-road, for Mr. O. Bradford; Mr. A. Ford, architect; Messrs. Miller & Selmes, builders. Four houses, Station-road; Mr. A. Chandler, architect; Mr. E. Marchant, builder. Addition to Palgrave-mansions, Devonshire-place; Messrs. Peerless, Dennis, & Co., builders. A plan has been lodged for alterations to the Club Hotel for Messrs. Young & Rawley; Mr. T. Woodbridge Biggs, architect.

Elvington (near Eythorpe).—Houses; Mr. W. Bromley, builder, Maison Dieu-road, Dover.

Foleshill.—Addition to school, Windmill-lane (4,058*l.*); Mr. I. Langley, builder, Tyburn, Chester-road, Erdington, Birmingham.

Freckleton.—Alterations and improvements to Holy Trinity Church for the Vicar.

Gorseinon.—Two hundred and sixty-four houses for the Gorseinon Co-partnership Housing Society.

Halstead.—Baths, Parsonage-street; Mr. W. A. Nicholson, Surveyor, Council Offices, Halstead.

Hinckley.—Proposed workmen's dwellings (1,850*l.*); Mr. E. H. Crump, Surveyor, Council Offices, Hinckley.

Holmfirth.—Hippodrome, Eldon-yard, for Messrs. Hawthorne & King. Mirfield; Mr. P. N. Brown, architect, Hawthorn Bank, Holmfirth.

Horton.—Alterations to Bolton and Horton car depôts (500*l.*); Mr. C. J. Spencer, Tramways Manager, Town Hall, Bradford.

Huddersfield.—Mill, Acre-street, Lindley, for Messrs. Joseph Sykes Brothers, branch of the British Card Clothing Company, Ltd., Acre Mills, Lindley, Huddersfield.

Huntingdon. — Children's quarters for Guardians; Mr. R. A. Fordham, architect, Peterborough.

Kilmarnock.—Reconstruction of infirmary (12,000*l.*); Dr. Burnett, architect, Glasgow.

Lancaster.—Church; Rev. A. S. Andrew, Pastor of Trinity Presbyterian Church, 2, Westbourne-terrace, Lancaster.

Larne.—Store, filter shed, Circular-road, for the North of Ireland Paper Mill Company, Ltd., Inver Mill, Larne.

Leigh (Lancashire).—Picture palace (3,000*l.*); Messrs. J. C. Prestwich & Son, architects, Bradshawgate-chambers, Leigh.

Lincoln.—Adaptation of premises, Bank-street, as tuberculosis dispensary, also probable sanatorium (10,030*l.*); Mr. R. A. MacBrair, Engineer, Town Hall, Lincoln.

Lincolnshire.—Six houses, Deeping St. James; four houses, Market Deeping; and four houses, Carlby; Mr. J. H. Roberts, builder, 3, North-street, Bourne.

Linslade.—School (1,638*l.*); Messrs. Webster & Cannon, builders, 42, Cambridge-street, Aylesbury.

Luton.—Workshops, Biscot-road, for Commercial Cars, Ltd., motor-car manufacturers, Biscot-road, Luton; additions to premises, Upper George-street, for Mr. W. M. Skelton

Maesteg.—Cottage hospital; Mr. Joseph Humphries, architect, Maesteg.

Manchester.—Proposed baths, Chorlton; Mr. Henry Price, Architect, Town Hall, Manchester.

Matlock.—Pavilion in the Park (4,000*l.*); Mr. Joseph Turner, Surveyor, Council Offices, Matlock.

Menai Bridge.—School (4,731*l.*); Messrs. R. & J. Williams, builders, Park-street, Upper Bangor.

Mountsorrel.—Conservative Club; Mr. F. Sleath, builder, Rothley, Loughborough.

Nelson.—Ten houses and shop, Carr Hall Estate, for the Co-operative Society.

Newcastle-under-Lyne.—Six houses, Brampton Farm, Garden Suburb; Mr. R. T. Longden, architect, York-chambers, Stoke-on-Trent; Mr. J. Cooke, builder, Wolstanton.

New Malden West.—School (4,700*l.*); Messrs. Grace & Marsh, builders, 79, Tamworth-road, Croydon.

Northampton. — Creosoting works, Coton End; Mr. Edward Mackie, Estate Agent, London and North-Western Railway Company, Ltd., Euston Station, N.W.

Nuneaton.—Cookery and manual instruction centres, Caton-road (3,642*l.*); Mr. S. Smith, builder, care of the Town Clerk, Town Hall, Nuneaton.

Rotherham.—Congregational church, Kimberworth-road; Mr. J. Totty, architect, 20, Moorgate-street, Rotherham.

Selby.—Proposed thirty to fifty houses; Mr. R. G. McG. Gray, Surveyor, Council Offices, Selby.

Smethwick. — Sanatorium, Holly-lane (11,200*l.*); Mr. A. Hoskens, Surveyor, Town Hall.

Southend.—Pumping-station and destructor buildings, two houses, etc. (13,195*l.*); Messrs. E. & B. H. Davey, builders, Southend. Theatre, Leigh-road, for the Raymond Animated Picture Company.

Swansea.—Extensions to warehouse at Prince of Wales' Dock (about 3,000*l.*) for the Swansea Harbour Trust. Buildings, Castle-street; Messrs. Phillips & Vaughan, architects, 39, Commercial-street, Newport, Mon. Buildings, Castle-street, Sea View-terrace, and alterations to premises, Carmarthen-road; Mr. Marcus Hoskins, Estate Agent, Town Hall, Swansea. The following plans have been passed:—Warehouse, Paxton-street, for Mr. E. Holwill; four houses, Sketty-road, for Mr. T. Spragg; eleven houses, Glanbrydan-avenue, for Mr. J. B. Jenkins; three houses, De Breos-avenue, for Mr. Jonah Roberts; four houses and garages, Eversley-road, for Mr. Henry Billings; four houses, De Breos-avenue, for Messrs. Munday, Hayes, Griffiths, & Pugh. A plan has been lodged for four houses, Fforestfach, for Messrs. Pepler & Allen.

Towcester.—Seventeen houses (2,710*l.*); Mr. Robert Marriott, builder, Higham-road, Rushden.

Wallasey.—Workmen's dwellings (4,110*l.*); Mr. W. H. Travers, Engineer, Town Hall, Wallasey.

Warwickshire.—Schools at Glascote, Hillmanton, and Studley; Mr. Bolton King, Secretary, County Education Offices, Warwick.

Wealdstone.—Additions to works for Messrs. Kodak, Ltd., Kingsway, W.C.

West Molesey.—School (4,595*l.*); Mr. E. Potterton, builder, East Molesey.

Wigan.—Proposed rebuilding of factory, Soho-street, for Mr. H. King, furniture manufacturer.

Willington.—Additional premises for the Co-operative Society.

Yorks (East Riding).—Adaptation of Armley House as boarding-house (500*l.*); school, North Newbold (1,500*l.*); and addition to school, Great Driffield; Mr. J. J. Bickersteth, Secretary, Education Offices, Beverley.

THE HYGIENE OF BUILDING.

At a meeting of the Institute of Sanitary Engineers on October 21 Mr. T. W. Aldwinckle, F.R.I.B.A., in the chair, a paper on "The Hygiene of Building" was read by Mr. Percy L. Marks. After some general remarks the author said, in speaking of ventilation:—"An important hygienic consideration is the provision of through ventilation. Can anything more detrimental to health be conceived than the old discredited arrangement of back-to-back houses, an arrangement that held in conjunction though it did not connote side-to-side houses as well. I say "discredited"; and yet it is not so long since I read in a North-British paper that one of the burghs had, though finally voting against their continuance, a fair-sized minority in favour of back-to-back houses—and that in the twentieth century! And in a provincial paper (of last April) I read that "Flint R.D.C. has ordered the closing of a house at Dyserth which has no water supply, no drainage, no light, no ventilation, and no bedroom, the only living-room being used for sleeping." . . .

Buildings should be well lighted; dark spaces connote disregarded collections of undesirable matter; and, if they do not connote, yet dark spaces certainly invite eye-strain and nervous breakdown. Scientifically-based proportions for lighting area have been tabulated, but it is difficult to credit the value of these proportions, except as a "Guide to the Perplexed." It has, for instance, been recommended that for each 70 cubic ft. of air space in an apartment there should be 1 sq. ft. of glass; and other proportions on different bases of calculation have been advocated. But these are, to an extent, rule-of-thumb methods that do not need to be regarded too rigorously. What ought to be borne in mind is that, whilst it is proper to ensure against unlighted spaces, an excess of light is also detrimental. But of the two extremes excess of light is preferable to a deficiency of light. . . .

Strictly regarded, ventilation and warming should not be dissociated, under which circumstances the intimate relation between warming and hygiene would be at once made manifest. And it must be remembered that warming should be warming, not scorching or drying the air or in any way rendering the effect enervating. It may almost be said that correct heating, when effected by mechanical means, is the result of empiricism, though it assumes the form of a scentifically-based tabulation. But science is itself built up for practical purposes upon an empirical basis, though fundamentally it is independent of and superior to the latter. Accepting matters as they stand, however, we are furnished with a plenitude of tables to indicate the quantity of 2-in., 3-in., or 4-in. pipe that should be provided under given conditions; and doubtless in a majority of cases this answers satisfactorily. . . .

The avoidance of draughts is an important point for consideration, and, to this end, doors and windows *vis-à-vis* to each other or to one another are undesirable. Nor is it well for a door to be placed in the wall contiguous to and overlooking the length of the fireplace; when the door is opened it produces a draught by the hearth more pronounced than in any other position, and only to be obviated by the interposition of a screen.

The best relative positions for door, window, and fireplace are probably as here detailed, if we start with an assumed writing-table placed more or less centrally; the fireplace to face the writer, the door to be to his right and opening against, not towards, the fireplace; the window area to be treated (in a moderate-sized room) as two separate openings to the writer's left, a solid wall confronting the more or less centrally-placed door in the opposite wall. Where writing facilities may be disregarded a left-hand light is not of importance, as, for instance, in a drawing-room, where such a lighting scheme would never be considered. In a small room an angle fireplace has distinct advantages, though this is not a hygienic point.

But the others just mentioned are assuredly hygienic points to be borne in mind, except that the reference to door-hanging is hygienic only so far as the promotion of a sudden draught between the fireplace and the open door is concerned, and is of effect only when the former is being used as a focus of attraction.

Another point is to obviate draughts between the front or other entrance door and any of the rooms. This satisfaction may be most frequently secured by interposing, if only a small vestibule, or by so deflecting the currents of air as to produce the like happy result. This deflection may be obtained by the use of a projecting porch with the opening set at one side.

A staircase-well is a fruitful source of draughts, but this feature is so commingled with the desire of possessing spacious and artistic or picturesque staircase treatment that it is difficult to effect a cure, except by using the well for a lift-run. . . .

The inter-relation of the living-rooms and the kitchen is of importance so far as the non-transportation of odours is concerned; for with people who are in any degree neurotic the insidious attack of such odours has an irritant effect upon the olfactory organs and the nervous system. A dinner-service hatch giving direct communication between the kitchen and the dining-room is very trying in this connexion.

Similarly with the inter-relation in regard to the water-closet, which is frequently improperly ventilated and improperly placed.

How often in the average-sized town house do we find it situated halfway up the principal staircase—perhaps the worst possible position for selection. But if it were merely from the standpoint of want of privacy I would not deal with it here; it is the hygienic objection that justifies—nay, calls—for its condemnation in this place. And its inter-relation with the bedrooms should be likewise carefully considered. Speaking generally, if it can be kept entirely detached from every room, other than a bath-room, it will be best so arranged. And there should be also entire detachment from all places where food is stored or cooked, but this is too frequently disregarded, though here also the Public Health Acts are gradually effecting improvements.

Hygienically it is a mistake for habitable rooms to be unduly high in proportion to their area; it tends to a stagnation of air, which is the negation of good ventilation. But how are we to find out what is the proper height, either absolute or relative? We may start with a minimum height of 8 ft. 6 in., for with any lesser height the ceiling would seem to press down upon the heads of the users of the room. But having fixed a minimum, can we find a maximum? I fear not; we may, of course, say that we cannot conceive of any room in an ordinary house being 30 ft. high, but how much nearer can we approximate a maximum? We can say that a cube room would perhaps be a desirable maximum, but further we cannot go, leaving it then a matter of hypothesis and a matter of proportion, not of dimensions. . . .

Respecting hospital-ward capacity I will concede a slight difference respecting data; for by means of accumulated experiments which result in experience it is perhaps possible to say that such and such a minimum of cubic space is requisite in order to promote convalescence under average conditions, and that such and such a lineal wall-space between patient and patient is desirable. This being so, and allowing for the necessary central gangway in a multiple ward, the desirable height is thus obtained. But when we are considering the spacing for barrack wards, for workhouse and school dormitories, and for other and smaller apartments unconnected with people in an abnormal pathogenic condition we are confronted at once with more empirical bases. For though scientists may say that all is properly based upon the assumed fact that a certain small fractional amount of CO_2 per 1,000 cubic ft. of air is the admissible maximum, yet we must bear in mind that other conditions are allowed to prevail outside hospitals and infirmaries without disturbing (not to say disastrous) results.

We must therefore be careful to distinguish between scientific formulæ and tables affecting people abnormally conditioned in regard to health and between all others. The Factory Acts, Building Acts, Health Acts, and others may, it is true, lay down instructions on such points, but I must emphasise the fact that there is no scientific accuracy about such instructions, though it may be conceded that they are far more than merely academic.

It is, of course, most desirable that bath-rooms, lavatories, water-closets, housemaids' closets, and sculleries should be placed against external walls and, as a natural sequence, be lighted and ventilated in an outer wall.

Even as the relative horizontal grouping of the living-rooms and the kitchen is to be regarded as hygienically important, so, too, is their relative vertical grouping. If a dinner-service lift is installed with its intake situated in the kitchen, then its outlet should not be in the dining-room, but in a lobby adjoining; otherwise the penetration of odours will be pronounced, which would prove trying and perhaps injurious to delicate nervous systems.

When considering hygienic construction it seems fitting to consider simultaneously the point of hygienic materials; otherwise there might be overlapping. Firstly, thin walls are detrimental to health in such samples of climates as the British Isles possess. Common bricks are naturally porous, though of late years there has been an increasing manufacture of denser stuff. Habitually, however, the atmospheric moisture penetrates readily, with the result of a general tendency to levelling of the internal and external temperatures, causing rooms to be hot or cold in sympathy with the rise or fall of the mercury. This is, of course, a mistake; the internal temperature should be able to be maintained easily some 10 deg. higher or lower than the external. In the good old days, when defensive building was in vogue, walls were built perhaps 10 ft. or more in thickness, so thick, indeed, at times that they would contain hidden rooms, tortuous corridors, and winding staircases—houses such as Woodstock, on whose site Blenheim now stands. Whatever defects they may have had, from a sanitary standpoint, they were certainly not subject to sudden and unwelcome changes of temperature—except such as might be provided by a conflagration. I do not forget that the houses of the commonalty in general were not so constructed; but even the latter were structurally superior to many, very many, of our modern edifices.

It is well where a wall-face is exposed to very humid influences that it should be protected either by weather-tiling or stucco; if it be a driving damp, stucco is preferable. Slate—the ordinary slate—makes a pervious roofing material. In fact, for the ordinary urban and suburban house all possible means seem to be taken so as to ensure uncomfortable conditions of existence. Again I must interpolate that I do not forget the numerous tile-hung roofed houses that are to be seen, but I have in mind the general treatment of the long-suffering public.

Lime-and-hair plaster is not a notably sanitary material to employ—it is too apt to harbour vermin; and the super-hanging of wall-paper upon wall-paper is a prime factor in similar harbourage. Let me tell you of an experience of my own with some small shop property in South London with which I had to deal in the way of repairs under a schedule of dilapidations served on my client. When the workmen commenced stripping the walls of the bedrooms they were able to count as many as eighteen separate papers, besides which there was a massed thickness that represented half a dozen or so more; that is to say, there were some twenty-four or more papers in all, and the inference is that in the whole course of the life of these premises not a single paper had ever been stripped off before hanging a fresh one. . . .

Lead and copper should, by preference, not be used for storage cisterns connected with table service; in fact, galvanised iron is now customarily employed. Thatched roofing is very pleasing in appearance, but, besides the fire risks attaching to its use, it is also apt to harbour vermin. Its good quality is the maintenance of an equable temperature. Oxide of lead paints should be avoided, as they are of a poisonous nature. Oxide of zinc and some of the many varieties of water paints may be safely employed. Arsenical wall-papers are a source of danger, particularly in bedrooms; poisonous particles may become detached and enter into the organs of those using the rooms. It is a popular mistake to think that only green tones contain arsenic. But the use of these papers is easily avoided at the present day. . . .

There is great merit in choosing good lavatory-basins, baths, and closet apparatus. The basin should be self-cleansing, and should have an accessible overflow—in so many lavatory-basins may be observed soap that has clung to the sides, even after a flush, and so often do we become unpleasantly cognisant of the odour of stale soap that has collected out of sight by the overflow. . . . Of course, there are other good overflows, but the weir principle, with the facility of removing the plate and exposing the overflow, appeals to my sense of cleanliness. The old-established shell-screened overflow is an abomination, harbouring collections of dried soapsuds that may easily prove injurious to health. Of course, the lavatory-basin waste should be provided with screw-capped cleansing traps in an accessible position, and should also have a puff-pipe (that is anti-siphonage pipe). Stack waste-pipes should also be supplemented by anti-siphonage pipes, so as to prevent the standing water from the traps being drawn out by the action of momentum and siphonage.

Baths should be trapped and should have accessible overflow and puff pipe. There should also be a dribble-pipe from the safe beneath the bath. Water waste-preventing (commonly called flushing) cisterns should be of good construction, and, where permitted, they should be of 3-gallon, instead of merely 2-gallon, capacity; nor should the inlet-pipe be contracted in bore, as is not infrequently the case.

Closet-pans should be self-cleaning, and should not only have a sufficient water-seal, but a fair standing water area also. Good valve-apparatus closets are very commendable, but still I prefer the "wash-down" variety of pedestal closet. Of course, the "wash-out" variety is adjectively unnameable, and is discredited in London, though not infrequently still to be met with in unmodernised systems.

And with all or any of these systems wooden enclosures are to be avoided, for even with the valve variety it is possible to obtain "pedestal" treatment. Baths and lavatories should also be unenclosed; let the fittings stand exposed to light and air.

As regards drainage, the lines should be straight and laid to a moderate fall only; too slight a gradient means the possibility of inefficient clearance, leaving deposits, which will gradually silt more and more and eventually choke the drain, and too steep a gradient also, curiously enough, may have a similar effect. It has been found that for 4-in. and 6-in. drainage a fall of 2 in. in 10 ft. (1 in 60 gradient) is generally effective; an increase in the pipe diameter should be met by a decrease in gradient, but an increased diameter should only be provided where the mass of discharge justifies it. In a house where I was concerned a few years ago I found that a system of 9-in. drainage throughout was installed, and this, too, by a firm of London engineers for a property dating only thirty years back even now. I had the whole of this cleared away, substituting 4 in. and 6 in. There was also not very far from the house a large choked-up cesspool, not habitually used; for by means of a sluice-valve inserted in a Y-junction pipe the discharge could be directed either to the cesspool or to the main sewer. This cesspool, too, I had cleaned out and filled in with brick rubbish and plenty of lime disinfectant. . . .

Where curves or changes of direction become necessary in a drainage system, manholes or inspection-chambers should be provided. Good pipes and good jointing are necessary. I have a preference for unsocketed pipes, such as those in Lowe's patent; the latter system admits, too, of quicker laying down, ensures a more satisfactory bedding, and is, in my opinion, likely to prove more lastingly satisfactory. Of course, all drains should be bedded on and partially in shallow concrete. Porous pipes and open joints are inadmissible, except for agricultural drainage and unconscientious landlords. . . .

Defective drains might be a matter of less urgency for replacement were they running in an open channel exposed to the free air of heaven, for they would then be aerated. But confined underground, noxious gases are generated, which gradually permeate the surrounding soil by way of defective work and materials, and thus promote a breakdown of health. Recently I had a case of this nature, where the tenant complained of the smell and also of the rats. Despite the fact that on inspection my plumber saw a rat poking his head up from the sewer through the cleaning-eye of the disconnexion trap (which was no disconnexion trap, as the eye lacked a sealing-off cap); despite the fact that my plumber and I saw plentiful marks of the claws and presence of the rats; despite the fact that we could not fill the drains with water (for the latter logged the surrounding soil and poured out in the disconnexion-chamber at all points and places, except by way of the channel pipes); despite the fact that we saw the smoke pouring in volumes through the open joints of the soil-vent pipes—despite all those facts, the sanitary inspector (declining to use the hydraulic test as being "unfair") calmly reported that there was nothing wrong anywhere under a smoke test, merely graciously conceding that it would be well to put a sealing-off cap to the eye of the disconnexion trap. It was red-tape rampant. . . ."

THE PROPERTIES OF NEW SOUTH WALES HARDWOOD TIMBERS.

In January, 1909, we published two articles on the principal varieties of timber furnished by the forests of Australia and New Zealand, dealing therein with the elaborate tests conducted by the Government of Western Australia and giving detailed information regarding the timbers of New South Wales.

Our readers will be interested to learn that full particulars are now available of the results of timber tests conducted under the auspices of the New South Wales Government by Professor W. H Warren, M.Inst.C.E., of Sydney University.

The tests in question were commenced in 1907 and continued up to December, 1910. They were of very comprehensive nature, and the data furnished are of far more than local interest.

The various kinds of tests carried out included (1) compression tests of cubes cut from sections in the tree at various heights from the ground in order to determine any variation in strength depending on the height from the ground; (2) tests of large and small beams; (3) test of long, medium, and short columns; (4) shearing tests; (5) tensile tests; (6) tests of the holding power of nails and spikes; (7) hardness tests; (8) torsion tests; (9) abrasion tests; (10) impact test of beams.

As far as possible the tests were planned in accordance with the systems elaborated by Professor W. K. Hatt, of the United States Bureau of Forestry, and by Professor Rudeloff, of Berlin.

The trees were selected for the tests by experts in the State Forestry Department, and represented average specimens of normal growth in the districts whence they were procured.

TABLE I.—COMPRESSION TESTS OF 4-IN. CUBES: NEW SOUTH WALES HARDWOODS.

Local Name.	Locality.	Strength, and Percentages of Moisture.		
		15 per cent.	25 per cent.	35 per cent.
		lb. per sq. in.	lb. per sq. in.	lb. per sq. in.
Blackbutt	South Coast	10,650	—	—
Grey box	South Coast	9,950	9,300	9,150
Grey ironbark	North Coast	9,500	8,550	8,200
Grey gum	North Coast	9,350	8,400	7,950
Woollybutt	South Coast	9,750	8,000	7,250
White stringybark	South Coast	9,650	—	—
Tallow-wood	North Coast	8,850	8,100	7,750
Red mahogany	North Coast	9,050	8,000	7,300
Brush box	North Coast	9,550	7,200	6,750
Spotted gum	South Coast	8,850	—	—
Blackbutt	North Coast	8,600	7,400	7,050
Colonial teak	North Coast	7,500	7,050	6,950
Blue gum	North Coast	7,600	6 8 0	6,450
Turpentine	North Coast	8,450	6 2 0	5,760
White mahogany	North Coast	7,400	6,400	5,850
Turpentine	South Coast	7,350	5,950	5,300

The specimens for testing as beams were prepared in a similar manner, and the columns were prepared with the ends in parallel planes at right angles to the axis of the column, one-half of the specimens having a square cross-section and the remainder turned to cylindrical form. Portions of the timber remaining sound after the column tests were cut up for other tests in which specimens of relatively small size were used.

TABLE II.—TESTS OF BEAMS: NEW SOUTH WALES HARDWOODS. (10 IN. SQUARE; 10-FT. SPAN.)

Local Name.	Breaking Load.	Modulus of Rupture.	Horizontal Shearing Stress.	Moment of Resilence per Cubic In.	Modulus of Elasticity.		Apparent Limit of Elasticity.
					From Deflection.	From Extension.	
	tons	lb. per sq. in.	lb. per sq. in.	in.-lb.	lb. per sq. in.	lb. per sq. in.	lb. per sq. in.
North Coast.							
Blackbutt	19·5	5,592	334·7	—	2·34	1·52	—
Tallow wood	40·9	11,900	679·6	1·33	2·79	1·75	7,700
Grey gum	24·4	9,077	465·0	1·09	2·44	1·40	5,850
Grey ironbark	38·5	12,433	658·3	1·36	2·90	1·66	7,966
Blue gum	35·7	12,687	643·5	2·00	2·32	1·47	7,067
Brush box	30·5	11,575	646·2	1·73	2·47	1·52	7,813
Turpentine	28·8	11,050	515·7	1·12	2·03	1·35	6,575
Red mahogany	28·8	10,150	498·2	1·90	2·43	1·59	7,500
White mahogany	31·4	9,657	521·2	1·51	2·28	1·54	7,087
Colonial teak	21·6	7,117	369·0	2·38	1·55	1·03	6,815
South Coast.							
Grey box	31·0	10,455	522·5	1·46	2·81	1·74	7,400
Woollybutt	27·7	9,315	467·5	1·98	2·31	1·49	8,382
Spotted gum	30·3	10,996	530·5	2·27	2·00	1·24	7,992
Turpentine	21·7	8,275	401·5	—	2·09	1·26	—
Blackbutt	27·7	10,352	502·7	1·98	2·50	1·52	8,575
Mountain ash	26·9	9,192	469·5	1·63	2·42	1·42	7,175
White stringybark	28·7	9,767	485·0	2·20	2·20	1·33	7,750

1. Compression Tests of Cubes.

The object of these tests was to determine whether the timber from a section of the tree near the base was stronger than that near the top of the trunk or at any intermediate level.

From each tree six cubes 4 in. wide were cut from five sections at different heights from the ground, making thirty cubes from each tree. The specimens tested were fairly sound, but large and small cracks developed in the process of seasoning, and gum-veins and knots appeared in some pieces. Such defects, unless marked, did not appear to affect the crushing strength to any extent.

Examination of the results obtained from the tests of cubes taken from different parts of the tree shows that timber from the highest section is somewhat stronger than that from the lower sections, but that the difference is so small that the timber may be considered for practical purposes as being of approximately equal strength throughout the length of the trunk.

Comparison of the detailed results stated in the Report for the various timbers tested shows that each variety of timber has a characteristic strength-moisture curve. The results, as plotted in diagrams, show that there is a point on each curve indicating that, after a certain percentage of moisture is reached, additional moisture does not seriously reduce the strength, while, on the other hand, the diminution of moisture produces an important increase in strength, which is much greater in some timbers than in others. The results, of which average values are summarised in Table I., illustrate the importance of seasoning on the strength of timber, and suggest that some timbers exposed to the weather may become considerably reduced in strength owing to the absorption of moisture. Another feature of the tests deserving of notice is that failure in every case occurred by shear along planes parallel to the annual rings.

2. Tests of Beams.

The large beams tested measured 10 in. square in cross-section, with a clear span of 10 ft., and the tests were made on a 100-ton testing machine, the loading being applied at two points equidistant from the centre of the length of the beam. This method of applying the load possesses the advantages that a constant bending moment and extreme fibre stress are produced between the points of application of the load over the central portion of the timber, and also that it approaches more nearly to the conditions existing in the practical use of timber than the method of loading the beams at the centre.

From portions of the large beams remaining sound after having been tested smaller beams were cut of similar geometrical form, each large beam furnishing material for sixteen small beams each 2 in. in cross-section with a clear span of 24 in.

It should be noted that the large and small beams were of square cross-section, and that in every case the span was twelve times the side of the square. In the case of the small beams the load was applied at the centre, as the main object of the tests was to determine the relationship of the strength and elasticity of the timber to the percentage of moisture contained.

In Table II. the modulus of rupture f, expressing the strength of the timber to resist loads causing deflection and rupture, has been calculated conformably with the constant bending moment $Wl/6$ over the

TABLE III.—SUMMARY OF TESTS ON COLUMNS: NEW SOUTH WALES HARDWOODS.

Local Name.	Short Columns.		Medium Columns.				Long Columns.			
	Square Section.		Round Section.		Square Section.		Square Section.		Round Section.	
	l/d.	Breaking Load: 15 per cent. Moisture.	l/d.	Breaking Load: 15 per cent. Moisture.	l/d.	Breaking Load: 15 per cent. Moisture.	l/d.	Breaking Load: 15 per cent. Moisture.	l/d.	Breaking Load: 15 per cent. Moisture.
		lb. per sq. in.		lb. per sq. in.		lb. per sq. in.		lb. per sq. in.		lb. per sq. in.
North Coast.										
Blackbutt	2·69	9,917	3·13	9,310	8·76	8,943	23·15	8,087	26·17	6,477
Tallow-wood	2·95	10,525	3·12	10,435	8·60	9,865	22·87	8,385	25·30	6,820
Grey gum	2·89	9,645	3·22	10,160	8·83	9,359	22·20	7,610	22·30	7,320
Grey ironbark	2·93	10,625	2·94	10,110	9·02	9,616	21·53	7,223	22·30	8,057
Blue gum	3·12	8,055	3·02	9,355	8·74	8,334	22·10	6,390	23·88	6,190
Brush box	2·86	9,720	3·36	8,825	9·49	8,760	24·26	6,750	27·75	5,917
Turpentine	2·86	9,510	3·09	9,285	9·66	9,350	24·56	6,266	24·83	6,130
Red mahogany	3·08	8,695	3·21	9,185	8·88	8,573	22·75	7,567	24·35	6,720
White mahogany	2·91	8,705	3·33	9,250	8·90	9,286	22·47	7,515	23·2	6,756
Colonial teak	2·70	7,345	2·88	8,150	8·93	7,476	21·83	6,080	22·72	5,457
South Coast.										
Grey box	2·89	9,155	2·89	9,775	8·84	9,294	22·86	8,485	22·45	7,712
Woollybutt	2·94	9,180	2·90	8,875	8·51	8,946	22·01	8,050	22·92	8,167
Spotted gum	2·92	7,870	2·95	7,725	8·96	8,096	22·93	6,350	22·75	6,637
Turpentine	2·88	8,175	3·27	8,630	9·65	8,220	25·22	6,690	23·72	6,145
Blackbutt	2·77	9,225	2·89	8,840	9·05	8,533	23·22	7,984	22·95	8,337
Mountain ash	2·83	—	3·03	—	8·78	—	23·40	—	22·36	—
White stringybark	2·71	8,320	2·86	8,305	9·45	8,110	22·56	7,475	22·82	7,395

TABLE IV.—SHEARING TESTS: NEW SOUTH WALES HARDWOODS.

Local Name.	Size of Test Piece.		Moisture.	Shearing Stress.
	Length.	Breadth.		
North Coast.	in.	in.	per cent.	lb. per sq. in.
Blackbutt	3	2·89	14·4	699
Tallow-wood	3	2·87	14·5	749
Grey gum	3	2·91	16·2	829
Grey ironbark	3	2·92	16·1	982
Blue gum	3	2·95	15·6	889
Brush box	3	2·91	14·9	850
Turpentine	3	2·93	14·1	835
Red mahogany	3	2·89	14·7	617
White mahogany	3	2·91	15·1	557
Colonial teak	3	2·90	12·9	873
South Coast.				
Grey box	3	2·87	16·5	914
Woollybutt	3	2·87	16·2	840
Spotted gum	3	2·87	17·0	965
Turpentine	3	2·87	14·8	801
Blackbutt	3	2·86	15·4	771
Mountain ash	3	2·90	14·8	783
White stringybark	3	2·83	15·1	683

central length of 40 in. by the formula: $f = 120\ W/bd^2$; and the horizontal shearing stress S_h has been calculated by the formula: $S_h = 0{\cdot}75\ W/bd$.

It will be observed that in Table II. the values of the modulus of elasticity as determined from the loads and deflections are always greater than those obtained from the measured extension of the extreme fibres in tension. This is due to the fact that the deflection is produced by the direct and shearing stresses combined, whereas the extreme fibre stresses and extensions are not affected by the shearing stresses, as the shearing stress is of zero value over the central portion of the beam.

The values of the moment of resilience given in the table denote the work done in producing the deflections, and have been calculated by the equation: $M.\ R_i = 0{\cdot}482\ W\Delta/lbd$.

The Report gives details of the tests conducted on the smaller beams mentioned, but, as limits of space will not permit us to consider these, the reader is referred to the Report for particulars.

3. Tests of Columns.

These tests were made on short, medium, and long columns. The short columns were 12 in. long and the long columns 8 ft. long, both kinds being of square and circular cross-section. The medium columns were 3 ft. long, and of square cross-section only. In every case the cross-section was either 4 in. square or 4 in. in diameter.

The results are given in several voluminous tables, for details of which the reader is referred to the Report itself; but we give in Table III. a summary of the average breaking loads for the three types of columns as computed for the uniform proportion of 15 per cent. of moisture, which was exceeded in only a few of the test columns. The average ratio l/d, denoting the ratio of the length to the diameter or side of the square, is included as an additional index to the proportions of the various columns tested.

The complete tables in the Report are of much practical value, clearly indicating the percentage of moisture, the degree of seasoning, and other conditions affecting strength and stiffness, and affording guidance of a kind that cannot be furnished by formulæ.

4. Shearing Tests.

The difficulty of making accurate tests of the shearing strength of any material is generally acknowledged. It is usually considered more satisfactory to subject the test specimens to shearing stress on one plane only, causing "single shear," than to apply the stress on two planes, resulting in "double shear."

In the previous tests by Professor Warren, the results of which were published in 1892, the method adopted did not ensure determination of the true shearing stress, as bending moment was necessarily developed, although the ultimate shear was confined to one plane.

The method in question was devised for testing the strength of timber used as keys in compound timber beams, and, while representing accurately the behaviour of timber so applied, is not suitable for general employment.

For the purpose of the tests described in the present Report a new method was adopted by Professor Warren, the shear being confined to one plane and the bending moment developed being very small.

It was originally intended to cut the test pieces so that shearing would take place only tangentially or normally to the direction of the annual rings, but this was not done with all the specimens, and in some cases the plane of shear was more or less inclined to the tangent.

In the case of all the test pieces for which results are summarised in Table IV. failure occurred in the plane of shear irrespective of its position relative to the plane of the annual rings.

The results in this table are considerably lower than those afforded by the method of testing described in the 1892 Report, the difference being due mainly to the practical elimination of bending moment by the new method.

5. Tensile Tests.

From a practical standpoint data on the tensile resistance of timber are of secondary importance, as in structures the members in tension are jointed at their ends to other members, and the weakest point is at the joint and its connexions, where shearing stress is the governing factor.

Nevertheless, reliable information as to the tensile strength of timber is of general utility, and tests bearing upon this property have been included in every comprehensive investigation of timber conducted in Europe and in America.

TABLE V.—TENSILE TESTS: NEW SOUTH WALES HARDWOODS. (SPECIMENS 8 IN. LONG, 1·23 SQ. IN. SECTIONAL AREA.)

Local Name.	Moisture.	Breaking Load.	Modulus of Elasticity.
North Coast.	per cent.	lb. per sq. in.	lb. per sq. in.
Blackbutt	12·2	17,985	4,282,000
Tallow-wood	14·8	21,260	4,382,500
Grey gum	15·1	14,820	4,057,000
Grey ironbark	13·2	12,610	3,110,500
Blue gum	12·5	20,260	3,530,000
Brush box	12·3	13,475	2,868,000
Turpentine	12·8	14,270	3,220,000
Red mahogany	—	—	—
White mahogany	12·0	10,515	3,264,000
Colonial teak	—	—	—
South Coast.			
Grey box	12·9	21,030	4,282,000
Woollybutt	13·2	21,215	4,516,000
Spotted gum	13·5	14,570	4,282,000
Turpentine	18·3	12,385	2,281,500
Blackbutt	13·2	14,340	2,990,000
Mountain ash	15·8	13,930	4,835,000
White stringybark	14·9	12,245	2,224,500

Comparison of the tables accompanying this article illustrate the fact that timber is stronger in tension than in compression, and very greatly stronger in tension than in shear.

For these reasons it is somewhat difficult to make tension tests, as the head and shoulders of the test specimen must be stronger than the portion subjected to pure tensile stress, and because the stress must be applied accurately along the axis of the test piece, so as to avoid the effect of transverse stress.

Table V. summarises the principal results obtained by Professor Warren from specimens 8 in. long with a middle parallel portion having the sectional area of 1·23 sq. in.

6. Tests of the Holding Power of Nails and Spikes.

Comparatively little attention has been given in this country to experiments on the holding power of nails, the most complete data hitherto available having been those furnished by investigations at Watertown Arsenal, in America.

These data are now supplemented by the results furnished by Mr. H. A. Roberts, B.E., and Professor Warren in the Russell Engineering Laboratory.

As our readers are aware, the holding power of a nail in timber depends upon the friction developed between the fibres and the surface of the driven nail, the pressure of the fibres on the nail being governed by the elastic properties and strength of the timber.

In soft woods a nail can be driven without first boring a hole, and, as demonstrated by the Watertown Arsenal tests, the wrought-iron cut nail possesses greater holding power than the steel-wire nail.

In Australian hardwoods the resistance to driving is so great that it is necessary first to bore a hole slightly smaller than the nail in order to obviate the risk of buckling the latter, or in the case of stout nails to avoid the risk of splitting the timber.

Professor Warren gives numerous tables and diagrams bearing upon this part of his investigation, and from them the following notes are based:—

The holding power of a 6-in. nail of No. 1 S.W.G. first driven to the depth of 3½ in. and withdrawn by stages varied from 1,331 lb. to 790 lb. per square inch of bearing surface, while the holding power for nails of the same size driven to depths ranging from 1½ in. up to 3½ in. varied from 1,438 lb. to 3,529 lb. per square inch of bearing surface.

Other experiments indicated that there is no definite relation between the size of the nail and the holding power per unit of surface, the results for nails of from No. 1 to No. 8 S.W.G. driven to the depth of 3 in. into ironbark varying only from 1,260 lb. to 1,320 lb. per square inch. The mean of 1,290 lb. per square inch is approximately three times the average holding power of nails in American softwoods.

An interesting point was the determination of the effect of the size of the holes on holding power. From the results quoted by Professor Warren we may cite as an example the fact that a 6-in. No. 1 S.W.G. nail driven 3 in. into a hole of 9·32 in. diameter developed the holding power of 1,130 lb. per square inch, while a similar nail driven direct into the wood showed the holding power of 1,400 lb. per square inch. For the reasons stated above it is desirable that the holes in hardwood should not be too small.

For purposes of comparison and reference we give in Tables VI. and VII. some of the results furnished by the tests of Professor Warren on Australian hardwoods, and by those conducted at Watertown Arsenal on American timber.

The effect of time and moisture on holding power are shown by other tables, the influence of time being somewhat variable, and that of moisture being always to reduce the holding power.

Finally, we may point out that the experiments of Professor Warren indicate the holding power of nails driven parallel to the layers of fibre to be slightly greater than that of similar nails driven perpendicular to the layers.

The holding power of spikes such as are used in railway and tramway practice is also discussed at some length in the Report, but as the results are generally similar to those for nails, and as most of our readers are less

TABLE VI.—HOLDING POWER OF NAILS IN AUSTRALIAN HARDWOODS. (6-IN. NO. 1 S.W.G. NAILS DRIVEN 3 IN. INTO HOLES $\frac{7}{32}$ IN. DIAMETER.)

Name of Timber.	Mean Load Applied per sq. in. of Surface.
	lb.
Grey ironbark	1,290
Tallow-wood	1,020
Blackbutt	1,060
White stringybark	724
White mahogany	998
Brush box	908
Grey box	1,017
Blue gum	910

TABLE VII.—HOLDING POWER OF NAILS IN AMERICAN TIMBER. (SIZE OF NAILS FROM 8D. TO 60D.)

Name of Timber.	Mean Holding Power per sq. in. of Surface.
	lb.
White pine	405
Yellow pine	692
White oak	1,216
Chestnut	683
Laurel	1,209

TABLE VIII.—ABRASION TESTS: NEW SOUTH WALES HARDWOODS.

Local Name.	Volume Abraded: Reduced to Standard.			Ratio of Hardness in the Three Planes.			Order of Combined Hardness in Planes (A), (B), and (C).
North Coast.	(A)	(B)	(C)	(A)	(B)	(C)	
Blackbutt	25	76	100	1	3·1	4·0	13
Tallow-wood	25	103	153	1	4·2	6·1	14
Grey gum	24	66·5	119	1	2·7	5·0	11
Grey ironbark	15·5	55·5	77·5	1	3·5	5·0	5
Blue gum	23·5	55·5	154	1	2·4	6·5	10
Brush box	21·5	42	93	1	2·0	4·3	8
Turpentine	27·5	37	61	1	1·3	2·2	7
Red mahogany	27·5	86·5	143·5	1	3·1	5·2	15
White mahogany	26	62·5	95·5	1	2·4	3·7	12
Colonial teak	44	116	95	1	2·6	2·2	16
South Coast.							
Grey box	21	43·5	76	1	2·0	3·6	4
Woollybutt	21	36	57·5	1	1·7	2·7	1
Spotted gum	21·5	44	51	1	2·0	2·4	3
Turpentine	21	38	74·5	1	1·8	3·5	2
Blackbutt	21·5	53	74·5	1	2·4	3·5	6
White Stringybark	29·5	33·5	82	1	1·1	2·8	9

interested in spikes of the kind than with ordinary nails, we need scarcely devote space to consideration of the tests.

7. Hardness Tests.

This part of the investigation was carried out by Mr. G. E. Cowdery, B.E., under the supervision of Professor Warren, with the object of ascertaining not only the relative hardness of the different varieties of timber under examination, but also of comparing the different methods of determining hardness.

Comparison was also made of the hardness of three planes relative to the directions of the fibre and the annual rings.

The tests applied were:—(1) The cross-compression test on a 100,000-lb. machine, (2) the Brinell-ball test with an apparatus forcing a ball of 0·78 in. diameter into the wood under a pressure of about 1 ton, and (3) the cone-pressure test with an appliance forcing a steel cone into the timber under a pressure of about 880 lb.

For detailed results our readers are referred to the complete Report.

8. Torsion Tests.

As the stress of the surface of a specimen subjected to pure torsion is a shearing stress, it was considered desirable to conduct tests of this kind for examination of the results with those furnished by the tests for direct shear.

While the relative shearing resistances of various timbers tested in this manner by torsion are probably more accurate than those given by direct shear tests, owing to the absence of bending moment, the values are higher in all cases, and are not applicable as data for ordinary structural computations.

9. Abrasion Tests.

These interesting tests, conducted by Mr. J. M. Royle, B.E., under the supervision of Professor Warren, were undertaken for the purpose of gauging the resistance of timber to wear when employed in flooring and paving.

TABLE IX.—IMPACT TESTS: NEW SOUTH WALES HARDWOODS. (2-IN. BY 2-IN. BY 24-IN. BEAMS.)

Local Name.	Average Moisture.	Average Work done in Breaking Beam.		Order of Resistance to Shock.
		Total.	Per cub. in.	
North Coast.	per cent.	foot-lb.	foot-lb.	
Blackbutt	15·7	265·6	3·87	7
Tallow-wood	17·3	295·6	3·13	12
Grey gum	15·1	256·6	2·78	13
Grey ironbark	16·9	88·0	1·25	5
Blue gum	16·9	410·5	4·04	6
Brush box	17·6	277·3	3·61	9
Turpentine	16·8	138·5	1·65	8
Red mahogany	15·2	355·5	3·54	11
White mahogany	13·5	267·1	2·13	17
Colonial teak	14·2	262·5	2·64	15
South Coast.				
Grey box	15·5	253·9	3·18	1
Woollybutt	17·2	414·7	4·41	4
Spotted gum	16·2	295·5	2·72	14
Turpentine	16·9	215·1	2·36	16
Blackbutt	15·3	427·1	4·52	3
Mountain ash	13·4	520·6	5·55	2
White stringybark	12·8	312·0	3·39	10

The timbers selected were tested by the sand-blast apparatus, which can be very conveniently applied, and ensures the wearing away of material by actual abrasion.

All specimens were cut to the size of 3 in. by 3 in. by 1 in., and were accurately weighed immediately before and after the tests. Having noted the weight of wood removed, this was divided by the weight per cubic inch of the timber to obtain the volume abrased in cubic inches. The result was multiplied by a constant to bring it to a convenient size, the number so obtained being written down as the hardness value of the various timbers.

To obviate discrepancies due to variations in the quality of the sand employed during successive tests a piece of standard timber was employed for each series of tests and the results reduced to a common basis.

In the tests conducted six specimens of each timber were used, as follows:—(A) Two parallel to the direction of the fibre, (B) two perpendicular to the direction of the fibre and perpendicular to the annual rings, and (C) two perpendicular to the direction of the fibre and tangential to the annual rings.

The mean results are given in Table VIII., where the direction of the tests is indicated by the letters (A), (B), and (C). It should be remembered that, since the amount of material removed by abrasion is inversely proportional to the hardness of the timber, the larger numbers in the table apply to the softer varieties of timber.

This table, which has been prepared from the data furnished in the Report, will be found of service to architects and others having occasion to select the most durable kinds of Australian timber for flooring and paving purposes.

10. Impact Tests.

The machine used for these tests was of the falling-weight type, comprising hammers of various weights arranged so as to fall from an height up to 13 ft.

The tests were conducted on beams 2 in. square in cross-section with a 24-in. span, their object being to determine the capacity of the various kinds of wood for resisting sudden shocks in practical construction.

Table IX. gives the principal results of nearly 150 tests, and includes a column where the order of merit of the various timbers is indicated by numbers. It will be noticed that stringy wood, such as mountain ash, gives high results, while brittle varieties, such as turpentine and colonial teak, show low average values.

APPLIANCE FOR CLEARING OBSTRUCTIONS FROM SINKS, LAVATORIES, ETC.

THE Little Giant Lift and Force Pump, patented by Hector Macfarlane, of 317, High Holborn, London, W.C., is a cheap and simple appliance for clearing obstructions from sinks, lavatories, water-closets, etc. Its weight is less than 2 lb., and it measures about 14 in. over all; the barrel is 9 in. long by 1½ in. diameter. With it are supplied two rubber washers, the smaller having a stepped conical face to fit various sizes of lavatory and sink wastes, and the larger being a force cup for use in water-closet and similar larger outgoes. The barrel is of brass and the piston is fitted with cup leathers, the whole construction being strong and easy to keep in order. Full printed instructions are supplied with each pump, and

The Little Giant Lift and Force Pump.

as the price is only 15s. it is an appliance which will not only be found useful, by the builder and plumber, but which may well be considered a good investment by the householder, who, by doing "odd jobs" for himself, tries to avoid the too frequent presence in his abode of those possibly much-maligned but certainly unpopular personages.

CERESIT.

THIS is a waterproofing material for cement, etc., much used by the German State and other authorities. It is a light-coloured paste, about the consistency of butter, and may be made into a milky emulsion with ten to twelve parts of water. With this milky fluid, instead of with water, the dry mixture of cement and sand is worked into a plastic state.

The proportions run about one sack of 50 kg. (= 110 lb. of cement) and three of sand to 2½ kg. of the ceresit. Four cubic metres (141·2 cubic ft.) of wet mortar to about 25 kg. (55 lb.) of ceresit are needed; or, reckoning on the amount required to cover a given surface to a given thickness we have:—

Per square metre,	2 cm.	thick,	0·5 kg.
,,	3 ,,	,,	0·75 ,,
,,	4 ,,	,,	1 ,,
Per square yard,	0·5 in.	thick,	1·1 lb. av.
,,	0·75 ,,	,,	1·65 ,,
,,	1 ,,	,,	2·2 ,,

The mortar is handled and applied just like any other of the same consistency and for the same purpose.

When it is required to keep out ground-water the sole—*i.e.*, the concrete or other surface covering of the whole area—must be strong enough not to be displaced by the weight of the building. The best material is a concrete of gravel or coarse pebbles; but where the water pressure and volume are not very great rolled broken brick will do, laid perhaps somewhat low in the centre, or several layers of brick-breaking joint may be used.

The bricks should be laid in cement mortar, or, if there is much water, in ceresit mortar, being thoroughly wetted down just before laying. The requisite thickness of sole depends on the pressure and volume of water, and on the size of the cellar, say, on an average for a compartment 4 × 5 metres, and 1 metre water pressure, a concrete sole 20 cm. thick, made of one part cement, two of sand, four to five of gravel or fine broken stone.

The foundation walls must be thick enough to make cracking impossible.

In waterproofing the walls for average water pressure 2·5 cm. to 3 cm. (1 in. to 1·2 in.) thick of plaster is sufficient. The walls should be thoroughly cleaned before plastering (any old plaster should be removed first), the mortar joints scratched out and well wetted. The plaster is then applied in several layers, well trowelled together, and finished by dusting with dry cement or

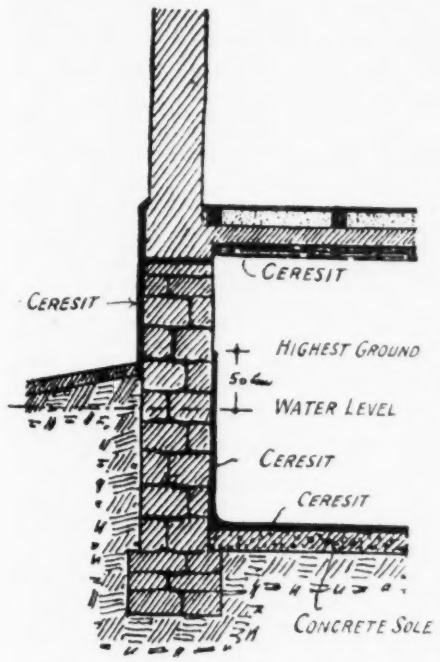


Fig. 1.

swabbing with very thin cement mixed in ceresit milk. When the water pressure is very considerable then the plaster may be 4 cm. (1·6 in.) thick below and thinned down as it goes upwards. This plaster should extend about 20 in. above the highest possible water level (Fig. 1).

The floor is to be treated with ceresit mortar, 3 cm. to 5 cm (1·2 in. to 2 in.) thick, applied, as the wall plaster was, in several well-trowelled layers. Before applying the ceresit the sole should be thoroughly cleaned, well wetted, and then swabbed with cement water. All corners and joining places of wall and floor should be rounded.

During the work of waterproofing, and for four to six days after (lay and night), nay water which may be flowing must be kept away. As a rule, a hole in the concrete sole, in which the water can collect, and from

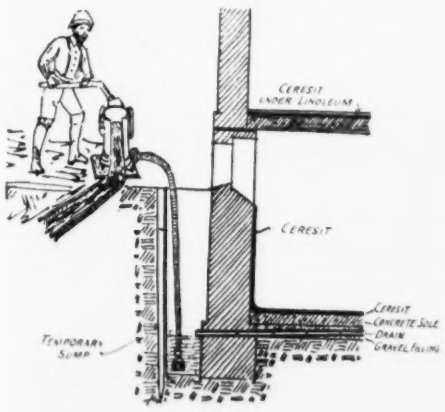


Fig. 2.

which it may be pumped, will suffice. When it is an important building it is best to have a regular drainage (Fig. 2).

In boiler-rooms, smoke passages, etc., the ceresit should be protected from the heat. This is best done by two layers of tiles (Fig. 3).

The insulating layer should not be penetrated by any iron parts, as hooks, hinges, etc.

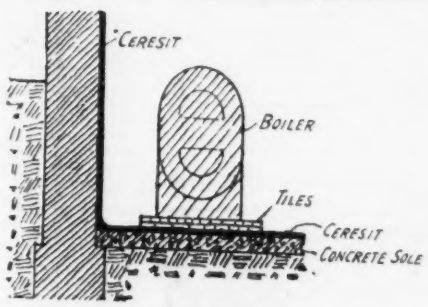


Fig. 3.

Solid stairways should not be built until the floors and walls below them have been treated with the ceresit mortar. The steps should not go through the insulating layer.

Where the ground water is very slight in quantity, and it is only a matter of protection against dampness from the earth and air, it will be sufficient to give the sole only about 3 cm. (1·2 in.) and the walls about 2 cm. (0·8 in.) of insulating plaster. When it is an old building the old mortar coat must be removed (or at least roughened) to give the new one a good hold; and the wall should be well cleaned before the insulating layer is applied.

On the weather side the walls should be protected inside and out, else there will be danger of fungus, mildewed wallpaper, scaling off of the plaster, etc. A thickness of 1·5 cm. to 2 cm. (0·6 in. to 0·8 in.) of 1 : 3 concrete mixed up with ceresit suffices. The plaster should be laid on in several layers and well worked in.

The ceresit permits the use of colouring materials, and even oil paint, after a very short time.

Where exterior plaster is out of the question, as in ornamental brickwork, etc., of course, the waterproof layer must be internal only, of the same thickness as for the outer side, but with a fat lime plaster layer about 3 mm. to 5 mm. (0·12 in. to 0·2 in.) thick to take up any moisture of condensation. Old lime plaster should be first removed.

When there is filled-in wooden framing the

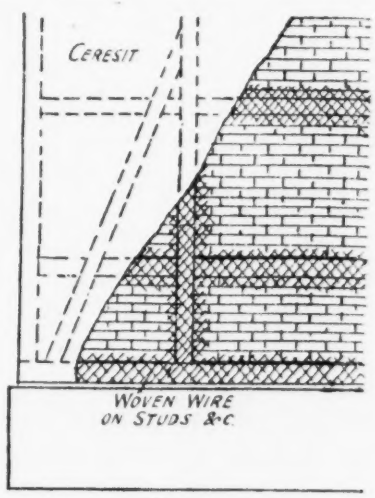


Fig. 4.

wooden portions should be covered with woven wire (Fig. 4).

For insulation of horizontal surfaces from moisture it is claimed for ceresit that, in the first place, ordinary masons can make and apply the protecting material without calling in the help of workmen skilled in asphalt work, with their special plant; and, in the second, that the insulation can be effected, if necessary, a little at a time, just as fast as the masonry is completed; and, in the third place, that the ceresit, in contrast to asphalt slabs, etc., makes a firm bond with the masonry, and the strength of the latter is in no way lessened, as is the case where the foundation and the upper work are separated by asphalt paper. It suffices to use 2 cm. to 3 cm. (0·8 in. to 1·2 in.) of the ceresit mortar in the proportion of one volume of cement and three of sand, mixed up with the ceresit "milk."

For terraces and balconies there must be sufficient provision for allowing the water to flow away. This can be done by giving the concrete surface itself slope, or by making the layer of ceresit mortar thicker at that side from which it is desired that the water shall flow; 3 cm. (1·2 in.) is the proper thickness to be applied to roughened and cleaned surfaces and well smoothed. The mix can be 1 : 3 with ceresit "milk." Meeting points of floor and wall are to be well rounded out: and it is better to carry the cement up about 8 in. from the floor. As soon as laid the layer is to be covered hand high with sand, which is to be let stand a week and damped down every day, then removed. This is to prevent too rapid drying and consequent cracking.

LABOUR IN THE COLONIES.

FROM the *Supplement to Circulars* issued from the Emigrants' Information Office, 34, Broadway, Westminster, S.W., we learn that in Sydney and suburbs, *New South Wales*, the furniture and iron trades have been fairly well employed, and competent men in these trades and strong railway labourers can get work. There is a good demand at Orange and Young for carpenters, bricklayers, painters, and plumbers. In *Victoria* competent mechanics will have little difficulty in securing employment. In *South Australia* work of nearly all kinds is plentiful, and a large amount of money is being spent on public works. There is a good demand for plasterers, cabinet makers, masons, galvanised iron-workers, carpenters, joiners, brickmakers, coppersmiths, sheet-metal workers, brass-finishers, and boiler-makers. In *New Zealand* the engineering, wood-working, building, and unskilled labour have been fairly busy, and are likely to improve at this season. The building trades of *Johannesburg* continue to be active in most branches, but the supply of labour is quite sufficient; there is no improvement in the engineering trades. There is no demand for more labour at *Pretoria*. At *Cape Town* there is no demand except for a few skilled plumbers, cement workers, and furniture makers. At *Durban* the only demand is for a few good plasterers, tilers, and plumbers.

THE TRADES DISPUTES ACT.

THE annual general meeting of the Glasgow Building Trades Exchange, Ltd., was held in the office, 67, Hope-street, on the 25th ult. Colonel Robert J. Bennett presided.

The Executive Council's nineteenth annual Report—for the year ending September 30—stated that the Council had continued to afford the Employers' Parliamentary Council every assistance in their power in their endeavour to force legislation in the direction of suppressing or limiting picketing, subjecting all unions to the ordinary law of the land, and suppressing as unlawful combinations federations of unions for the purpose of "paralysing the country" by means of a general strike. To this end the Executive, having with other associations signed the memorial to the Prime Minister, thereafter addressed a communication to him urging him to receive a deputation on the subject. The Prime Minister up till now had declined on account of pressure of business, and it was undoubted that the Government have sufficient business on hand to occupy them for some time. The Council had been approached urging that items should be introduced into schedules to cover the increased cost of workmen's compensation insurance and insurance under the National Insurance Bill. The matter was fully discussed in connexion with the revision of the regulations for measurement of mason-work, and it was resolved that these charges must be treated as oncost in the same way as office rent, wages, etc., that they must be taken into account by the contractor in quoting, and that no special item should be introduced into schedules to cover same. The following members of Council who retire at this time were re-elected:—Messrs. Robert J. Bennett, Matthew Henderson, William Howatt, John Keppie, James Goldie, James A. Ferguson, and R. A. MacGillivray.

On the motion of the Chairman, seconded by Mr. Matthew Henderson, the Report was adopted.

ACCIDENT AT KINGSWOOD.

A builder's scaffolding in front of a new picture palace, which is being erected at Kingswood, near Bristol, suddenly collapsed and threw fourteen workmen on to the ground. Some of the men had limbs broken and others were found suffering from internal injuries.

Cockermouth.—Proposed new building for the Board of Management, Cockermouth Nursing Home.

Crompton.—Warehouse at Higher Clough Mills for the executors of Mr. J. Milne, cotton spinner.

Cullompton.—Unitarian chapel (900*l.*); Mr. R. M. Challice, architect, 14, Bedford-circus, Exeter; Messrs. E. Labdon & Sons, builders, 1, Fore-street, Cullompton.

Denbeath.—Residence adjoining hospital for the Wemyss Coal Company, Ltd., East Wemyss, Fifeshire.

Doncaster.—Proposed addition to Yorkshire Institute for the Deaf and Dumb (4,900*l.*) for the Governors.

Dundee.—Additions to buildings, Dens-road and Main-street, for Messrs. Harry Walkers & Sons, Ltd., jute goods, etc., manufacturers, Caldrum Works, St. Salvador-street; additions to Lilybank Foundry for the Caledon Shipbuilding and Engineering Company, Ltd., Kembach-street, Dundee.

Dunston-on-Tyne.—Proposed large steelworks for the Stobie Steel Company of Sheffield; works for the Team By-Products Coke Company, Ltd., Milburn House, Newcastle-on-Tyne.

Eastbourne.—Plans have been passed as follows:—Garage, Prideaux-road, for Mr. O. Bradford; Mr. A. Ford, architect; Messrs. Miller & Selmes, builders. Four houses, Station-road; Mr. A. Chandler, architect; Mr. E. Marchant, builder. Addition to Palgrave-mansions, Devonshire-place; Messrs. Peerless, Dennis, & Co., builders. A plan has been lodged for alterations to the Club Hotel for Messrs. Young & Rawley; Mr. T. Woodbridge Biggs, architect.

Elvington (near Eythorpe).—Houses; Mr. W. Bromley, builder, Maison Dieu-road, Dover.

Foleshill.—Addition to school, Windmill-lane (4,058*l.*); Mr. I. Langley, builder, Tyburn, Chester-road, Erdington, Birmingham.

Freckleton.—Alterations and improvements to Holy Trinity Church for the Vicar.

Gorseinon.—Two hundred and sixty-four houses for the Gorseinon Co-partnership Housing Society.

Halstead.—Baths, Parsonage-street; Mr. W. A. Nicholson, Surveyor, Council Offices, Halstead.

Hinckley.—Proposed workmen's dwellings (1,850*l.*); Mr. E. H. Crump, Surveyor, Council Offices, Hinckley.

Holmfirth.—Hippodrome, Eldon-yard, for Messrs. Hawthorne & King, Mirfield; Mr. P. N. Brown, architect, Hawthorn Bank, Holmfirth.

Horton.—Alterations to Bolton and Horton car depôts (500*l.*); Mr. C. J. Spencer, Tramways Manager, Town Hall, Bradford.

Huddersfield.—Mill, Acre-street, Lindley, for Messrs. Joseph Sykes Brothers, branch of the British Card Clothing Company, Ltd., Acre Mills, Lindley, Huddersfield.

Huntingdon.—Children's quarters for Guardians; Mr. R. A. Fordham, architect, Peterborough.

Kilmarnock.—Reconstruction of infirmary (12,000*l.*); Dr. Burnett, architect, Glasgow.

Lancaster.—Church; Rev. A. S. Andrew, Pastor of Trinity Presbyterian Church, 2, Westbourne-terrace, Lancaster.

Larne.—Store, filter shed. Circular-road, for the North of Ireland Paper Mill Company, Ltd., Inver Mill, Larne.

Leigh (Lancashire).—Picture palace (3,000*l.*); Messrs. J. C. Prestwich & Son, architects, Bradshawgate-chambers, Leigh.

Lincoln.—Adaptation of premises, Bank-street, as tuberculosis dispensary, also probable sanatorium (10,030*l.*); Mr. R. A. MacBrair, Engineer, Town Hall, Lincoln.

Lincolnshire.—Six houses, Deeping—St. James; four houses, Market Deeping; and four houses, Carlby; Mr. J. H. Roberts, builder, 3, North-street, Bourne.

Linslade.—School (1,638*l.*); Messrs. Webster & Cannon, builders, 42, Cambridge-street, Aylesbury.

Luton.—Workshops, Biscot-road, for Commercial Cars, Ltd., motor-car manufacturers, Biscot-road, Luton; additions to premises, Upper George-street, for Mr. W. M. Skelton.

Maesteg.—Cottage hospital; Mr. Joseph Humphries, architect, Maesteg.

Manchester.—Proposed baths, Chorlton; Mr. Henry Price, Architect, Town Hall, Manchester.

Matlock.—Pavilion in the Park (4,000*l.*); Mr. Joseph Turner, Surveyor, Council Offices, Matlock.

Menai Bridge.—School (4,751*l.*); Messrs. R. & J. Williams, builders, Park-street, Upper Bangor.

Mountsorrel.—Conservative Club; Mr. F. Sleath, builder, Rothley, Loughborough.

Nelson.—Ten houses and shop, Carr Hall Estate, for the Co-operative Society.

Newcastle-under-Lyne.—Six houses, Brampton Farm, Garden Suburb; Mr. R. T. Longden, architect, York-chambers, Stoke-on-Trent; Mr. J. Cooke, builder, Wolstanton.

New Malden West.—School (4,700*l.*); Messrs. Grace & Marsh, builders, 79, Tamworth-road, Croydon.

Northampton.—Creosoting works, Coton End; Mr. Edward Mackie, Estate Agent, London and North-Western Railway Company, Ltd., Euston Station, N.W.

Nuneaton.—Cookery and manual instruction centres, Caton-road (3,642*l.*); Mr. S. Smith, builder, care of the Town Clerk, Town Hall, Nuneaton.

Rotherham.—Congregational church, Kimberworth-road; Mr. J. Totty, architect, 20, Moorgate-street, Rotherham.

Selby.—Proposed thirty to fifty houses; Mr. R. G. McG. Gray, Surveyor, Council Offices, Selby.

Smethwick.—Sanatorium, Holly-lane (11,200*l.*); Mr. A. Hoskens, Surveyor, Town Hall.

Southend.—Pumping-station and destructor buildings, two houses, etc. (13,195*l.*); Messrs. E. & B. H. Davey, builders, Southend. Theatre, Leigh-road, for the Raymond Animated Picture Company.

Swansea.—Extensions to warehouse at Prince of Wales' Dock (about 3,000*l.*) for the Swansea Harbour Trust. Buildings, Castle-street; Messrs. Phillips & Vaughan, architects, 39, Commercial-street, Newport, Mon. Buildings, Castle-street, Sea View-terrace, and alterations to premises, Carmarthen-road; Mr. Marcus Hoskins, Estate Agent, Town Hall, Swansea. The following plans have been passed:—Warehouse, Paxton-street, for Mr. E. Holwill; four houses, Sketty-road, for Mr. T. Spragg; eleven houses, Glanbrydan-avenue, for Mr. J. B. Jenkins; three houses, De Breos-avenue, for Mr. Jonah Roberts; four houses and garages, Eversley-road, for Mr. Henry Billings; four houses, De Breos-avenue, for Messrs. Munday, Hayes, Griffiths, & Pugh. A plan has been lodged for four houses, Fforestfach, for Messrs. Pepler & Allen.

Towcester.—Seventeen houses (2,710*l.*); Mr. Robert Marriott, builder, Higham-road, Rushden.

Wallasey.—Workmen's dwellings (4,110*l.*); Mr. W. H. Travers, Engineer, Town Hall, Wallasey.

Warwickshire.—Schools at Glascote, Hillmanton, and Studley; Mr. Bolton King, Secretary, County Education Offices, Warwick.

Wealdstone.—Additions to works for Messrs. Kodak, Ltd., Kingsway, W.C.

West Molesey.—School (4,595*l.*); Mr. E. Potterton, builder, East Molesey.

Wigan.—Proposed rebuilding of factory, Soho-street, for Mr. H. King, furniture manufacturer.

Willington.—Additional premises for the Co-operative Society.

Yorks (East Riding).—Adaptation of Armley House as boarding-house (500*l.*); school, North Newbold (1,500*l.*); and addition to school, Great Driffield; Mr. J. J. Bickersteth, Secretary, Education Offices, Beverley.

THE HYGIENE OF BUILDING.

At a meeting of the Institute of Sanitary Engineers on October 21 Mr. T. W. Aldwinckle, F.R.I.B.A., in the chair, a paper on "The Hygiene of Building" was read by Mr. Percy L. Marks. After some general remarks the author said, in speaking of ventilation:—"An important hygienic consideration is the provision of through ventilation. Can anything more detrimental to health be conceived than the old discredited arrangement of back-to-back houses, an arrangement that held in conjunction though it did not connote side-to-side houses as well. I say "discredited"; and yet it is not so long since I read in a North-British paper that one of the burghs had, though finally voting against their continuance, a fair-sized minority in favour of back-to-back houses—and that in the twentieth century! And in a provincial paper (of last April) I read that "Flint R.D.C. has ordered the closing of a house at Dyserth which has no water supply, no drainage, no light, no ventilation, and no bedroom, the only living-room being used for sleeping." . . .

Buildings should be well lighted; dark spaces connote disregarded collections of undesirable matter; and, if they do not connote, yet dark spaces certainly invite eye-strain and nervous breakdown. Scientifically-based proportions for lighting area have been tabulated, but it is difficult to credit the value of these proportions, except as a "Guide to the Perplexed." It has, for instance, been recommended that for each 70 cubic ft. of air space in an apartment there should be 1 sq. ft. of glass; and other proportions on different bases of calculation have been advocated. But these are, to an extent, rule-of-thumb methods that do not need to be regarded too rigorously. What ought to be borne in mind is that, whilst it is proper to ensure against unlighted spaces, an excess of light is also detrimental. But of the two extremes excess of light is preferable to a deficiency of light. . . .

Strictly regarded, ventilation and warming should not be dissociated, under which circumstances the intimate relation between warming and hygiene would be at once made manifest. And it must be remembered that warming should be warming, not scorching or drying the air or in any way rendering the effect enervating. It may almost be said that correct heating, when effected by mechanical means, is the result of empiricism, though it assumes the form of a scentifically-based tabulation. But science is itself built up for practical purposes upon an empirical basis, though fundamentally it is independent of and superior to the latter. Accepting matters as they stand, however, we are furnished with a plenitude of tables to indicate the quantity of 2-in., 3-in., or 4-in. pipe that should be provided under given conditions; and doubtless in a majority of cases this answers satisfactorily. . . .

The avoidance of draughts is an important point for consideration, and, to this end, doors and windows *vis-à-vis* to each other or to one another are undesirable. Nor is it well for a door to be placed in the wall contiguous to and overlooking the length of the fireplace; when the door is opened it produces a draught by the hearth more pronounced than in any other position, and only to be obviated by the interposition of a screen.

The best relative positions for door, window, and fireplace are probably as here detailed, if we start with an assumed writing-table placed more or less centrally; the fireplace to face the writer, the door to be to his right and opening against, not towards, the fireplace; the window area to be treated (in a moderate-sized room) as two separate openings to the writer's left, a solid wall confronting the more or less centrally-placed door in the opposite wall. Where writing facilities may be disregarded a left-hand light is not of importance, as, for instance, in a drawing-room, where such a lighting scheme would never be considered. In a small room an angle fireplace has distinct advantages, though this is not a hygienic point.

But the others just mentioned are assuredly hygienic points to be borne in mind, except that the reference to door-hanging is hygienic only so far as the promotion of a sudden draught between the fireplace and the open door is concerned, and is of effect only when the former is being used as a focus of attraction.

Another point is to obviate draughts between the front or other entrance door and any of the rooms. This satisfaction may be most frequently secured by interposing, if only a small vestibule, or by so deflecting the currents of air as to produce the like happy result. This deflection may be obtained by the use of a projecting porch with the opening set at one side.

A staircase-well is a fruitful source of draughts, but this feature is so commingled with the desire of possessing spacious and artistic or picturesque staircase treatment that it is difficult to effect a cure, except by using the well for a lift-run. . . .

The inter-relation of the living-rooms and the kitchen is of importance so far as the non-transportation of odours is concerned; for with people who are in any degree neurotic the insidious attack of such odours has an irritant effect upon the olfactory organs and the nervous system. A dinner-service hatch giving direct communication between the kitchen and the dining-room is very trying in this connexion.

Similarly with the inter-relation in regard to the water-closet, which is frequently improperly ventilated and improperly placed.

How often in the average-sized town house do we find it situated halfway up the principal staircase—perhaps the worst possible position for selection. But if it were merely from the standpoint of want of privacy I would not deal with it here; it is the hygienic objection that justifies—nay, calls—for its condemnation in this place. And its inter-relation with the bedrooms should be likewise carefully considered. Speaking generally, if it can be kept entirely detached from every room, other than a bath-room, it will be best so arranged. And there should be also entire detachment from all places where food is stored or cooked, but this is too frequently disregarded, though here also the Public Health Acts are gradually effecting improvements.

Hygienically it is a mistake for habitable rooms to be unduly high in proportion to their area; it tends to a stagnation of air, which is the negation of good ventilation. But how are we to find out what is the proper height, either absolute or relative? We may start with a minimum height of 8 ft. 6 in., for with any lesser height the ceiling would seem to press down upon the heads of the users of the room. But having fixed a minimum, can we find a maximum? I fear not; we may, of course, say that we cannot conceive of any room in an ordinary house being 30 ft. high, but how much nearer can we approximate a maximum? We can say that a cube room would perhaps be a desirable maximum, but further we cannot go, leaving it then a matter of hypothesis and a matter of proportion, not of dimensions. . . .

Respecting hospital-ward capacity I will concede a slight difference respecting data; for by means of accumulated experiments which result in experience it is perhaps possible to say that such and such a minimum of cubic space is requisite in order to promote convalescence under average conditions, and that such and such a lineal wall-space between patient and patient is desirable. This being so, and allowing for the necessary central gangway in a multiple ward, the desirable height is thus obtained. But when we are considering the spacing for barrack wards, for workhouse and school dormitories, and for other and smaller apartments unconnected with people in an abnormal pathogenic condition we are confronted at once with more empirical bases. For though scientists may say that all is properly based upon the assumed fact that a certain small fractional amount of CO_2 per 1,000 cubic ft. of air is the admissible maximum, yet we must bear in mind that other conditions are allowed to prevail outside hospitals and infirmaries without disturbing (not to say disastrous) results.

We must therefore be careful to distinguish between scientific formulæ and tables affecting people abnormally conditioned in regard to health and between all others. The Factory Acts, Building Acts, Health Acts, and others may, it is true, lay down instructions on such points, but I must emphasise the fact that there is no scientific accuracy about such instructions, though it may be conceded that they are far more than merely academic.

It is, of course, most desirable that bath-rooms, lavatories, water-closets, housemaids' closets, and sculleries should be placed against external walls and, as a natural sequence, be lighted and ventilated in an outer wall.

Even as the relative horizontal grouping of the living-rooms and the kitchen is to be regarded as hygienically important, so, too, is their relative vertical grouping. If a dinner-service lift is installed with its intake situated in the kitchen, then its outlet should not be in the dining-room, but in a lobby adjoining; otherwise the penetration of odours will be pronounced, which would prove trying and perhaps injurious to delicate nervous systems.

When considering hygienic construction it seems fitting to consider simultaneously the point of hygienic materials; otherwise there might be overlapping. Firstly, thin walls are detrimental to health in such samples of climates as the British Isles possess. Common bricks are naturally porous, though of late years there has been an increasing manufacture of denser stuff. Habitually, however, the atmospheric moisture penetrates readily, with the result of a general tendency to levelling of the internal and external temperatures, causing rooms to be hot or cold in sympathy with the rise or fall of the mercury. This is, of course, a mistake; the internal temperature should be able to be maintained easily some 10 deg. higher or lower than the external. In the good old days, when defensive building was in vogue, walls were built perhaps 10 ft. or more in thickness, so thick, indeed, at times that they would contain hidden rooms, tortuous corridors, and winding staircases—houses such as Woodstock, on whose site Blenheim now stands. Whatever defects they may have had, from a sanitary standpoint, they were certainly not subject to sudden and unwelcome changes of temperature—except such as might be provided by a conflagration. I do not forget that the houses of the commonalty in general were not so constructed; but even the latter were structurally superior to many, very many, of our modern edifices.

It is well where a wall-face is exposed to very humid influences that it should be protected either by weather-tiling or stucco; if it be a driving damp, stucco is preferable. Slate—the ordinary slate—makes a pervious roofing material. In fact, for the ordinary urban and suburban house all possible means seem to be taken so as to ensure uncomfortable conditions of existence. Again I must interpolate that I do not forget the numerous tile-hung roofed houses that are to be seen, but I have in mind the general treatment of the long-suffering public.

Lime-and-hair plaster is not a notably sanitary material to employ—it is too apt to harbour vermin; and the super-hanging of wall-paper upon wall-paper is a prime factor in similar harbourage. Let me tell you of an experience of my own with some small shop property in South London with which I had to deal in the way of repairs under a schedule of dilapidations served on my client. When the workmen commenced stripping the walls of the bedrooms they were able to count as many as eighteen separate papers, besides which there was a massed thickness that represented half a dozen or so more; that is to say, there were some twenty-four or more papers in all, and the inference is that in the whole course of the life of these premises not a single paper had ever been stripped off before hanging a fresh one. . . .

Lead and copper should, by preference, not be used for storage cisterns connected with table service; in fact, galvanised iron is now customarily employed. Thatched roofing is very pleasing in appearance, but, besides the fire risks attaching to its use, it is also apt to harbour vermin. Its good quality is the maintenance of an equable temperature. Oxide of lead paints should be avoided, as they are of a poisonous nature. Oxide of zinc and some of the many varieties of water paints may be safely employed. Arsenical wall-papers are a source of danger, particularly in bedrooms; poisonous particles may become detached and enter into the organs of those using the rooms. It is a popular mistake to think that only green tones contain arsenic. But the use of these papers is easily avoided at the present day. . . .

There is great merit in choosing good lavatory-basins, baths, and closet apparatus. The basin should be self-cleansing, and should have an accessible overflow—in so many lavatory-basins may be observed soap that has clung to the sides, even after a flush, and so often do we become unpleasantly cognisant of the odour of stale soap that has collected out of sight by the overflow. . . . Of course, there are other good overflows, but the weir principle, with the facility of removing the plate and exposing the overflow, appeals to my sense of cleanliness. The old-established shell-screened overflow is an abomination, harbouring collections of dried soapsuds that may easily prove injurious to health. Of course, the lavatory-basin waste should be provided with screw-capped cleansing traps in an accessible position, and should also have a puff-pipe (that is anti-siphonage pipe). Stack waste-pipes should also be supplemented by anti-siphonage-pipes, so as to prevent the standing water from the traps being drawn out by the action of momentum and siphonage.

Baths should be trapped and should have accessible overflow and puff pipe. There should also be a dribble-pipe from the safe beneath the bath. Water waste-preventing (commonly called flushing) cisterns should be of good construction, and, where permitted, they should be of 3-gallon, instead of merely 2-gallon, capacity; nor should the inlet-pipe be contracted in bore, as is not infrequently the case.

Closet-pans should be self-cleaning, and should not only have a sufficient water-seal, but a fair standing water area also. Good valve-apparatus closets are very commendable, but still I prefer the "wash-down" variety of pedestal closet. Of course, the "wash-out" variety is adjectively unnameable, and is discredited in London, though not infrequently still to be met with in unmodernised systems.

And with all or any of these systems wooden enclosures are to be avoided, for even with the valve variety it is possible to obtain "pedestal" treatment. Baths and lavatories should also be unenclosed; let the fittings stand exposed to light and air.

As regards drainage, the lines should be straight and laid to a moderate fall only; too slight a gradient means the possibility of inefficient clearance, leaving deposits, which will gradually silt more and more and eventually choke the drain, and too steep a gradient also, curiously enough, may have a similar effect. It has been found that for 4-in. and 6-in. drainage a fall of 2 in. in 10 ft. (1 in 60 gradient) is generally effective; an increase in the pipe diameter should be met by a decrease in gradient, but an increased diameter should only be provided where the mass of discharge justifies it. In a house where I was concerned a few years ago I found that a system of 9-in. drainage throughout was installed, and this, too, by a firm of London engineers for a property dating only thirty years back even now. I had the whole of this cleared away, substituting 4 in. and 6 in. There was also not very far from the house a large choked-up cesspool, not habitually used; for by means of a sluice-valve inserted in a Y-junction pipe the discharge could be directed either to the cesspool or to the main sewer. This cesspool, too, I had cleaned out and filled in with brick rubbish and plenty of lime disinfectant. . . .

Where curves or changes of direction become necessary in a drainage system, manholes or inspection-chambers should be provided. Good pipes and good jointing are necessary. I have a preference for unsocketed pipes, such as those in Lowe's patent; the latter system admits, too, of quicker laying down, ensures a more satisfactory bedding, and is, in my opinion, likely to prove more lastingly satisfactory. Of course, all drains should be bedded on and partially in shallow concrete. Porous pipes and open joints are inadmissible, except for agricultural drainage and unconscientious landlords. . . .

Defective drains might be a matter of less urgency for replacement were they running in an open channel exposed to the free air of heaven, for they would then be aerated. But confined underground, noxious gases are generated, which gradually permeate the surrounding soil by way of defective work and materials, and thus promote a breakdown of health. Recently I had a case of this nature, where the tenant complained of the smell and also of the rats. Despite the fact that on inspection my plumber saw a rat poking his head up from the sewer through the cleaning-eye of the disconnexion trap (which was no disconnexion trap, as the eye lacked a sealing-off cap); despite the fact that my plumber and I saw plentiful marks of the claws and presence of the rats; despite the fact that we could not fill the drains with water (for the latter logged the surrounding soil and poured out in the disconnexion-chamber at all points and places, except by way of the channel pipes); despite the fact that we saw the smoke pouring in volumes through the open joints of the soil-vent pipes—despite all those facts, the sanitary inspector (declining to use the hydraulic test as being "unfair") calmly reported that there was nothing wrong anywhere under a smoke test, merely graciously conceding that it would be well to put a sealing-off cap to the eye of the disconnexion trap. It was red-tape rampant. . . ."

THE PROPERTIES OF NEW SOUTH WALES HARDWOOD TIMBERS.

In January, 1909, we published two articles on the principal varieties of timber furnished by the forests of Australia and New Zealand, dealing therein with the elaborate tests conducted by the Government of Western Australia and giving detailed information regarding the timbers of New South Wales.

Our readers will be interested to learn that full particulars are now available of the results of timber tests conducted under the auspices of the New South Wales Government by Professor W. H. Warren, M.Inst.C.E., of Sydney University.

The tests in question were commenced in 1907 and continued up to December, 1910. They were of very comprehensive nature, and the data furnished are of far more than local interest.

The various kinds of tests carried out included (1) compression tests of cubes cut from sections in the tree at various heights from the ground in order to determine any variation in strength depending on the height from the ground; (2) tests of large and small beams; (3) test of long, medium, and short columns; (4) shearing tests; (5) tensile tests; (6) tests of the holding power of nails and spikes; (7) hardness tests; (8) torsion tests; (9) abrasion tests; (10) impact test of beams.

As far as possible the tests were planned in accordance with the systems elaborated by Professor W. K. Hatt, of the United States Bureau of Forestry, and by Professor Rudeloff, of Berlin.

The trees were selected for the tests by experts in the State Forestry Department, and represented average specimens of normal growth in the districts whence they were procured.

TABLE I.—COMPRESSION TESTS OF 4-IN. CUBES: NEW SOUTH WALES HARDWOODS.

Local Name.	Locality.	Strength, and Percentages of Moisture.		
		15 per cent.	25 per cent.	35 per cent.
		lb. per sq. in.	lb. per sq. in.	lb. per sq. in.
Blackbutt	South Coast	10,650	—	—
Grey box	South Coast	9,950	9,300	9,150
Grey ironbark	North Coast	9,300	8,550	8,200
Grey gum	North Coast	9,350	8,400	7,950
Woollybutt	South Coast	9,750	8,000	7,250
White stringybark	South Coast	9,650	—	—
Tallow-wood	North Coast	8,850	8,100	7,750
Red mahogany	North Coast	9,050	8,000	7,300
Brush box	North Coast	9,550	7,200	6,750
Spotted gum	South Coast	8,850	—	—
Blackbutt	North Coast	8,600	7,400	7,050
Colonial teak	North Coast	7,500	7,050	6,950
Blue gum	North Coast	7,600	6,800	6,450
Turpentine	North Coast	8,450	6,200	5,700
White mahogany	North Coast	7,400	6,400	5,850
Turpentine	South Coast	7,350	5,950	4,300

The varieties of timber tested were:—Blackbutt (*Eucalyptus pilularis*), tallow-wood (*Eucalyptus microcorys*), grey gum (*Eucalyptus punctata*), grey ironbark (*Eucalyptus paniculata*), red ironbark (*Eucalyptus sideroxylon*), blue gum (*Eucalyptus saliana*), brush box (*Tristania conferta*), turpentine (*Syncarpia laurifolia*), red mahogany (*Eucalyptus resinifera*), white mahogany (*Eucalyptus acmenoides*), and colonial teak (*Flindersia Australis*), these from the North Coast district; grey box (*Eucalyptus hemiphloia*), woollybutt (*Eucalyptus longifolia*), spotted gum (*Eucalyptus maculata*), turpentine (*Syncarpia laurifolia*), blackbutt (*Eucalyptus pilularis*), mountain ash (*Eucalyptus Sieberiana*), and white stringybark (*Eucalyptus eugenoides*), from the South Coast district.

Great care was taken in cutting and preparing specimens for testing, and to secure uniformity in the conditions. One-half the number of specimens for the compression tests were prepared with two faces as nearly as possible tangential to the annual rings, and the other half with the diagonal of the square pressure surface radial to the trunk section.

The specimens for testing as beams were prepared in a similar manner, and the columns were prepared with the ends in parallel planes at right angles to the axis of the column, one-half of the specimens having a square cross-section and the remainder turned to cylindrical form. Portions of the timber remaining sound after the column tests were cut up for other tests in which specimens of relatively small size were used.

TABLE II.—TESTS OF BEAMS: NEW SOUTH WALES HARDWOODS. (10 IN. SQUARE; 10-FT. SPAN.)

Local Name.	Breaking Load.	Modulus of Rupture.	Horizontal Shearing Stress.	Moment of Resilience per Cubic In.	Modulus of Elasticity.		Apparent Limit of Elasticity.
					From Deflection.	From Extension.	
North Coast.	tons	lb. per sq. in.	lb. per sq. in.	in.-lb.	lb. per sq. in.	lb. per sq. in.	lb. per sq. in.
Blackbutt	19·5	5,592	334·7	—	2·34	1·52	—
Tallow-wood	40·9	11,900	679·6	1·33	2·79	1·75	7,700
Grey gum	24·4	9,077	465·0	1·09	2·44	1·40	5,810
Grey ironbark	38·5	12,433	658·3	1·36	2·90	1·66	7,966
Blue gum	35·7	12,687	643·5	2·00	2·32	1·47	7,907
Brush box	33·5	11,575	646·2	1·73	2·47	1·52	7,813
Turpentine	28·8	11,030	515·7	1·12	2·03	1·35	6,575
Red mahogany	28·8	10,150	498·2	1·90	2·43	1·59	7,500
White mahogany	31·4	9,657	521·2	1·51	2·28	1·24	7,087
Colonial teak	21·6	7,117	1·6·0	2·38	1·55	1·63	6,815
South Coast.							
Grey box	31·0	10,455	522·5	1·46	2·81	1·74	7,400
Woollybutt	27·7	9,315	467·5	1·98	2·31	1·49	8,382
Spotted gum	30·3	10,996	530·5	2·23	2·00	1·24	7,992
Turpentine	21·7	8,275	401·5	—	2·09	1·26	—
Blackbutt	27·7	10,352	502·7	1·96	2·50	1·52	8,575
Mountain ash	26·9	9,192	469·5	1·63	2·42	1·42	7,175
White stringybark	28·7	9,767	485·0	2·20	2·20	1·33	7,780

1. Compression Tests of Cubes.

The object of these tests was to determine whether the timber from a section of the tree near the base was stronger than that near the top of the trunk or at any intermediate level.

From each tree six cubes 4 in. wide were cut from five sections at different heights from the ground, making thirty cubes from each tree. The specimens tested were fairly sound, but large and small cracks developed in the process of seasoning, and gum-veins and knots appeared in some pieces. Such defects, unless marked, did not appear to affect the crushing strength to any extent.

Examination of the results obtained from the tests of cubes taken from different parts of the tree shows that timber from the highest section is somewhat stronger than that from the lower sections, but that the difference is so small that the timber may be considered for practical purposes as being of approximately equal strength throughout the length of the trunk.

Comparison of the detailed results stated in the Report for the various timbers tested shows that each variety of timber has a characteristic strength-moisture curve. The results, as plotted in diagrams, show that there is a point on each curve indicating that, after a certain percentage of moisture is reached, additional moisture does not seriously reduce the strength, while, on the other hand, the diminution of moisture produces an important increase in strength, which is much greater in some timbers than in others. The results, of which average values are summarised in Table I., illustrate the importance of seasoning on the strength of timber, and suggest that some timbers exposed to the weather may become considerably reduced in strength owing to the absorption of moisture. Another feature of the tests deserving of notice is that failure in every case occurred by shear along planes parallel to the annual rings.

2. Tests of Beams.

The large beams tested measured 10 in. square in cross-section, with a clear span of 10 ft., and the tests were made on a 100-ton testing machine, the loading being applied at two points equidistant from the centre of the length of the beam. This method of applying the load possesses the advantages that a constant bending moment and extreme fibre stress are produced between the points of application of the load over the central portion of the timber, and also that it approaches more nearly to the conditions existing in the practical use of timber than the method of loading the beams at the centre.

From portions of the large beams remaining sound after having been tested smaller beams were cut of similar geometrical form, each large beam furnishing material for sixteen small beams each 2 in. in cross-section with a clear span of 24 in.

It should be noted that the large and small beams were of square cross-section, and that in every case the span was twelve times the side of the square. In the case of the small beams the load was applied at the centre, as the main object of the tests was to determine the relationship of the strength and elasticity of the timber to the percentage of moisture contained.

In Table II. the modulus of rupture f, expressing the strength of the timber to resist loads causing deflection and rupture, has been calculated conformably with the constant bending moment $Wl/6$ over the

TABLE III.—SUMMARY OF TESTS ON COLUMNS: NEW SOUTH WALES HARDWOODS.

Local Name.	Short Columns.		Medium Columns.			Long Columns.			
	Square Section.		Round Section.		Square Section.	Square Section.		Round Section.	
	l/d.	Breaking Load: 15 per cent Moisture.	l/d.	Breaking Load: 15 per cent. Moisture.	l/d.	l/d.	Breaking Load: 15 per cent. Moisture.	l/d.	Breaking Load: 15 per cent. Moisture.
North Coast.		lb. per sq. in.		lb. per sq. in.			lb. per sq. in.		lb. per sq. in.
Blackbutt	2·69	9,917	3·13	9,310	8·76	23·15	8,087	26·17	6,477
Tallow-wood	2·95	10,525	3·12	10,435	8·60	22·87	8,383	25·30	6,820
Grey gum	2·89	9,645	3·22	10,160	8·83	22·20	7,610	22·30	7,360
Grey ironbark	2·93	10,625	2·94	10,110	9·02	21·53	7,223	22·30	8,037
Blue gum	3·12	8,055	3·02	9,355	8·74	22·10	6,390	23·88	6,190
Brush box	2·86	9,720	3·36	8,825	9·49	24·26	6,750	27·75	5,917
Turpentine	2·86	9,510	3·09	9,285	9·66	24·56	6,266	24·93	6,100
Red mahogany	3·08	8,605	3·21	9,185	8·88	22·75	7,567	24·35	6,720
White mahogany	2·91	8,705	3·33	9,250	8·90	22·47	7,515	23·2	6,756
Colonial teak	2·70	7,345	2·88	8,150	8·93	21·83	6,080	22·72	5,457
South Coast.									
Grey box	2·89	9,155	2·89	9,775	8·84	22·86	8,485	22·45	7,712
Woollybutt	2·94	9,180	2·90	8,875	8·51	22·01	8,050	22·92	8,167
Spotted gum	2·92	7,870	2·95	7,725	8·96	22·93	6,350	22·75	6,637
Turpentine	2·88	8,175	3·27	8,630	9·65	25·22	6,690	23·72	6,145
Blackbutt	2·77	9,225	2·89	8,840	9·05	23·22	7,984	22·95	8,337
Mountain ash	2·83	—	3·03	—	8·78	23·40	—	22·36	—
White stringybark	2·71	8,320	2·86	8,305	9·45	22·56	7,475	22·82	7,395

TABLE IV.—SHEARING TESTS: NEW SOUTH WALES HARDWOODS.

Local Name.	Size of Test Piece. Length.	Breadth.	Moisture.	Shearing Stress.
North Coast.	in.	in.	per cent.	lb. per sq. in.
Blackbutt	3	2·89	14·4	699
Tallow-wood	3	2·87	14·5	749
Grey gum	3	2·91	16·2	820
Grey ironbark	3	2·92	16·1	982
Blue gum	3	2·95	15·6	889
Brush box	3	2·91	14·9	850
Turpentine	3	2·93	14·1	835
Red mahogany	3	2·89	14·7	617
White mahogany	3	2·91	15·1	557
Colonial teak	3	2·90	12·9	873
South Coast.				
Grey box	3	2·87	16·5	914
Woollybutt	3	2·87	16·2	840
Spotted gum	3	2·87	17·0	965
Turpentine	3	2·87	14·8	801
Blackbutt	3	2·86	15·4	771
Mountain ash	3	2·90	14·8	783
White stringybark	3	2·83	15·1	683

central length of 40 in. by the formula: $f = 120\ W/bd^2$; and the horizontal shearing stress S_h has been calculated by the formula: $S_h = 0{\cdot}75\ W/bd$.

It will be observed that in Table II. the values of the modulus of elasticity as determined from the loads and deflections are always greater than those obtained from the measured extension of the extreme fibres in tension. This is due to the fact that the deflection is produced by the direct and shearing stresses combined, whereas the extreme fibre stresses and extensions are not affected by the shearing stresses, as the shearing stress is of zero value over the central portion of the beam.

The values of the moment of resilience given in the table denote the work done in producing the deflections, and have been calculated by the equation: $M.\ R_i = 0{\cdot}482\ W\Delta/lbd$.

The Report gives details of the tests conducted on the smaller beams mentioned, but, as limits of space will not permit us to consider these, the reader is referred to the Report for particulars.

3. Tests of Columns.

These tests were made on short, medium, and long columns. The short columns were 12 in. long and the long columns 8 ft. long, both kinds being of square and circular cross-section. The medium columns were 3 ft. long, and of square cross-section only. In every case the cross-section was either 4 in. square or 4 in. in diameter.

The results are given in several voluminous tables, for details of which the reader is referred to the Report itself; but we give in Table III. a summary of the average breaking loads for the three types of columns as computed for the uniform proportion of 15 per cent. of moisture, which was exceeded in only a few of the test columns. The average ratio l/d, denoting the ratio of the length to the diameter or side of the square, is included as an additional index to the proportions of the various columns tested.

The complete tables in the Report are of much practical value, clearly indicating the percentage of moisture, the degree of seasoning, and other conditions affecting strength and stiffness, and affording guidance of a kind that cannot be furnished by formulæ.

4. Shearing Tests.

The difficulty of making accurate tests of the shearing strength of any material is generally acknowledged. It is usually considered more satisfactory to subject the test specimens to shearing stress on one plane only, causing "single shear," than to apply the stress on two planes, resulting in "double shear."

In the previous tests by Professor Warren, the results of which were published in 1892, the method adopted did not ensure determination of the true shearing stress, as bending moment was necessarily developed, although the ultimate shear was confined to one plane.

The method in question was devised for testing the strength of timber used as keys in compound timber beams, and, while representing accurately the behaviour of timber so applied, is not suitable for general employment.

For the purpose of the tests described in the present Report a new method was adopted by Professor Warren, the shear being confined to one plane and the bending moment developed being very small.

It was originally intended to cut the test pieces so that shearing would take place only tangentially or normally to the direction of the annual rings, but this was not done with all the specimens, and in some cases the plane of shear was more or less inclined to the tangent.

In the case of all the test pieces for which results are summarised in Table IV. failure occurred in the plane of shear irrespective of its position relative to the plane of the annual rings.

The results in this table are considerably lower than those afforded by the method of testing described in the 1892 Report, the difference being due mainly to the practical elimination of bending moment by the new method.

5. Tensile Tests.

From a practical standpoint data on the tensile resistance of timber are of secondary importance, as in structures the members in tension are jointed at their ends to other members, and the weakest point is at the joint and its connexions, where shearing stress is the governing factor.

Nevertheless, reliable information as to the tensile strength of timber is of general utility, and tests bearing upon this property have been included in every comprehensive investigation of timber conducted in Europe and in America.

TABLE V.—TENSILE TESTS: NEW SOUTH WALES HARDWOODS. (SPECIMENS 8 IN. LONG, 1·23 SQ. IN. SECTIONAL AREA.)

Local Name.	Moisture.	Breaking Load.	Modulus of Elasticity.
North Coast.	per cent.	lb. per sq. in.	lb. per sq. in.
Blackbutt	12·2	17,985	4,282,000
Tallow-wood	14·8	21,260	4,382,500
Grey gum	15·1	14,830	4,057,000
Grey ironbark	13·2	12,610	3,110,500
Blue gum	12·5	20,260	3,530,000
Brush box	12·3	13,475	2,868,000
Turpentine	12·8	14,270	3,220,000
Red mahogany	—	—	—
White mahogany	12·0	10,515	3,264,000
Colonial teak	—	—	—
South Coast.			
Grey box	12·9	21,030	4,282,000
Woollybutt	13·2	21,215	4,516,000
Spotted gum	13·5	14,570	4,282,000
Turpentine	18·3	12,385	2,281,500
Blackbutt	13·2	14,340	2,990,000
Mountain ash	15·8	13,930	4,835,000
White stringybark	14·9	12,245	2,224,500

Comparison of the tables accompanying this article illustrate the fact that timber is stronger in tension than in compression, and very greatly stronger in tension than in shear.

For these reasons it is somewhat difficult to make tension tests, as the head and shoulders of the test specimen must be stronger than the portion subjected to pure tensile stress, and because the stress must be applied accurately along the axis of the test piece, so as to avoid the effect of transverse stress.

Table V. summarises the principal results obtained by Professor Warren from specimens 8 in. long with a middle parallel portion having the sectional area of 1·23 sq.in.

6. Tests of the Holding Power of Nails and Spikes.

Comparatively little attention has been given in this country to experiments on the holding power of nails, the most complete data hitherto available having been those furnished by investigations at Watertown Arsenal, in America.

These data are now supplemented by the results furnished by Mr. H. A. Roberts, B.E., and Professor Warren in the Russell Engineering Laboratory.

As our readers are aware, the holding power of a nail in timber depends upon the friction developed between the fibres and the surface of the driven nail, the pressure of the fibres on the nail being governed by the elastic properties and strength of the timber.

In soft woods a nail can be driven without first boring a hole, and, as demonstrated by the Watertown Arsenal tests, the wrought-iron cut nail possesses greater holding power than the steel-wire nail.

In Australian hardwoods the resistance to driving is so great that it is necessary first to bore a hole slightly smaller than the nail in order to obviate the risk of buckling the latter, or in the case of stout nails to avoid the risk of splitting the timber.

Professor Warren gives numerous tables and diagrams bearing upon this part of his investigation, and from them the following notes are based:—

The holding power of a 6-in. nail of No. 1 S.W.G. first driven to the depth of 3½ in. and withdrawn by stages varied from 1,331 lb. to 790 lb. per square inch of bearing surface, while the holding power for nails of the same size driven to depths ranging from 1½ in. up to 3½ in. varied from 1,438 lb. to 3,529 lb. per square inch of bearing surface.

Other experiments indicated that there is no definite relation between the size of the nail and the holding power per unit of surface, the results for nails of from No. 1 to No. 8 S.W.G. driven to the depth of 3 in. into ironbark varying only from 1,260 lb. to 1,320 lb. per square inch. The mean of 1,290 lb. per square inch is approximately three times the average holding power of nails in American softwoods.

An interesting point was the determination of the effect of the size of the holes on holding power. From the results quoted by Professor Warren we may cite as an example the fact that a 6-in. No. 1 S.W.G. nail driven 3 in. into a hole of 9-32 in. diameter developed the holding power of 1,130 lb. per square inch, while a similar nail driven direct into the wood showed the holding power of 1,400 lb. per square inch. For the reasons stated above it is desirable that the holes in hardwood should not be too small.

For purposes of comparison and reference we give in Tables VI. and VII. some of the results furnished by the tests of Professor Warren on Australian hardwoods, and by those conducted at Watertown Arsenal on American timber.

The effect of time and moisture on holding power are shown by other tables, the influence of time being somewhat variable, and that of moisture being always to reduce the holding power.

Finally, we may point out that the experiments of Professor Warren indicate the holding power of nails driven parallel to the layers of fibre to be slightly greater than that of similar nails driven perpendicular to the layers.

The holding power of spikes such as are used in railway and tramway practice is also discussed at some length in the Report, but as the results are generally similar to those for nails, and as most of our readers are less

TABLE VI.—HOLDING POWER OF NAILS IN AUSTRALIAN HARDWOODS. (6-IN. NO. 1 S.W.G. NAILS DRIVEN 3 IN. INTO HOLES 9/32 IN. DIAMETER.)

Name of Timber.	Mean Load Applied per sq. in. of Surface.
	lb.
Grey ironbark	1,290
Tallow-wood	1,020
Blackbutt	1,060
White stringybark	724
White mahogany	908
Brush box	908
Grey box	1,017
Blue gum	910

TABLE VII.—HOLDING POWER OF NAILS IN AMERICAN TIMBER. (SIZE OF NAILS FROM 8D. TO 60D.)

Name of Timber.	Mean Holding Power per sq. in. of Surface.
	lb.
White pine	405
Yellow pine	662
White oak	1,216
Chestnut	683
Laurel	1,200

TABLE VIII.—ABRASION TESTS: NEW SOUTH WALES HARDWOODS.

Local Name.	Volume Abraded: Reduced to Standard.			Ratio of Hardness in the Three Planes.			Order of Combined Hardness in Planes (A), (B), and (C).
North Coast.	(A)	(B)	(C)	(A)	(B)	(C)	
Blackbutt	25	76	100	1	3·1	4·0	13
Tallow-wood	25	103	153	1	4·2	6·1	14
Grey gum	24	66·5	119	1	2·7	5·0	11
Grey ironbark	15·5	55·5	77·5	1	3·5	5·0	5
Blue gum	23·5	55·5	154	1	2·4	6·5	10
Brush box	21·5	42	93	1	2·0	4·3	8
Turpentine	27·5	37	61	1	1·3	2·2	7
Red mahogany	27·5	86·5	143·5	1	3·1	5·2	15
White mahogany	26	62·5	95·5	1	2·4	3·7	12
Colonial teak	44	116	93	1	2·6	2·2	16
South Coast.							
Grey box	21	43·5	76	1	2·0	3·6	4
Woollybutt	21	36	57·5	1	1·7	2·7	1
Spotted gum	21·5	44	51	1	2·0	2·4	3
Turpentine	21	38	74·5	1	1·8	3·5	2
Blackbutt	21·5	53	74·5	1	2·4	3·5	6
White Stringybark	29·5	33·5	82	1	1·1	2·8	9

interested in spikes of the kind than with ordinary nails, we need scarcely devote space to consideration of the tests.

7. Hardness Tests.

This part of the investigation was carried out by Mr. G. E. Cowdery, B.E., under the supervision of Professor Warren, with the object of ascertaining not only the relative hardness of the different varieties of timber under examination, but also of comparing the different methods of determining hardness.

Comparison was also made of the hardness of three planes relative to the directions of the fibre and the annual rings.

The tests applied were:—(1) The cross-compression test on a 100,000-lb. machine, (2) the Brinell-ball test with an apparatus forcing a ball of 0·78 in. diameter into the wood under a pressure of about 1 ton, and (3) the cone-pressure test with an appliance forcing a steel cone into the timber under a pressure of about 880 lb.

For detailed results our readers are referred to the complete Report.

8. Torsion Tests.

As the stress of the surface of a specimen subjected to pure torsion is a shearing stress, it was considered desirable to conduct tests of this kind for examination of the results with those furnished by the tests for direct shear.

While the relative shearing resistances of various timbers tested in this manner by torsion are probably more accurate than those given by direct shear tests, owing to the absence of bending moment, the values are higher in all cases, and are not applicable as data for ordinary structural computations.

9. Abrasion Tests.

These interesting tests, conducted by Mr. J. M. Royle, B.E., under the supervision of Professor Warren, were undertaken for the purpose of gauging the resistance of timber to wear when employed in flooring and paving.

TABLE IX.—IMPACT TESTS: NEW SOUTH WALES HARDWOODS. (2-IN. BY 2-IN. BY 24-IN. BEAMS.)

Local Name.	Average Moisture.	Average Work done in Breaking Beam.		Order of Resistance to Shock.
		Total.	Per cub. in.	
North Coast.	per cent.	foot-lb.	foot-lb.	
Blackbutt	15·7	365·6	3·87	7
Tallow-wood	17·3	295·6	3·13	12
Grey gum	15·4	256·6	2·78	13
Grey ironbark	16·9	406·0	4·25	5
Blue gum	16·9	410·5	4·04	6
Brush box	17·6	332·3	3·61	9
Turpentine	16·8	338·5	3·65	8
Red mahogany	15·2	335·5	3·54	11
White mahogany	13·5	267·1	2·13	17
Colonial teak	14·2	252·5	2·64	15
South Coast.				
Grey box	15·7	575·9	6·18	1
Woollybutt	17·2	414·7	4·41	4
Spotted gum	16·2	259·5	2·72	14
Turpentine	16·9	215·3	2·36	16
Blackbutt	15·3	427·1	4·52	3
Mountain ash	13·4	530·6	5·55	2
White stringybark	12·8	312·0	3·39	10

The timbers selected were tested by the sand-blast apparatus, which can be very conveniently applied, and ensures the wearing away of material by actual abrasion.

All specimens were cut to the size of 3 in. by 3 in. by 1 in., and were accurately weighed immediately before and after the tests. Having noted the weight of wood removed, this was divided by the weight per cubic inch of the timber to obtain the volume abrased in cubic inches. The result was multiplied by a constant to bring it to a convenient size, the number so obtained being written down as the hardness value of the various timbers.

To obviate discrepancies due to variations in the quality of the sand employed during successive tests a piece of standard timber was employed for each series of tests and the results reduced to a common basis.

In the tests conducted six specimens of each timber were used, as follows:—(A) Two parallel to the direction of the fibre, (B) two perpendicular to the direction of the fibre and perpendicular to the annual rings, and (C) two perpendicular to the direction of the fibre and tangential to the annual rings.

The mean results are given in Table VIII., where the direction of the tests is indicated by the letters (A), (B), and (C). It should be remembered that, since the amount of material removed by abrasion is inversely proportional to the hardness of the timber, the larger numbers in the table apply to the softer varieties of timber.

This table, which has been prepared from the data furnished in the Report, will be found of service to architects and others having occasion to select the most durable kinds of Australian timber for flooring and paving purposes.

10. Impact Tests.

The machine used for these tests was of the falling-weight type, comprising hammers of various weights arranged so as to fall from an height up to 13 ft.

The tests were conducted on beams 2 in. square in cross-section with a 24-in. span, their object being to determine the capacity of the various kinds of wood for resisting sudden shocks in practical construction.

Table IX. gives the principal results of nearly 150 tests, and includes a column where the order of merit of the various timbers is indicated by numbers. It will be noticed that stringy wood, such as mountain ash, gives high results, while brittle varieties, such as turpentine and colonial teak, show low average values.

APPLIANCE FOR CLEARING OBSTRUCTIONS FROM SINKS, LAVATORIES, ETC.

THE Little Giant Lift and Force Pump, patented by Hector Macfarlane, of 317, High Holborn, London, W.C., is a cheap and simple appliance for clearing obstructions from sinks, lavatories, water-closets, etc. Its weight is less than 2 lb., and it measures about 14 in. over all; the barrel is 9 in. long by 1¼ in. diameter. With it are supplied two rubber washers, the smaller having a stopped conical face to fit various sizes of lavatory and sink wastes, and the larger being a force cup for use in water-closet and similar larger outgoes. The barrel is of brass and the piston is fitted with cup leathers, the whole construction being strong and easy to keep in order. Full printed instructions are supplied with each pump, and

The Little Giant Lift and Force Pump.

as the price is only 15s. it is an appliance which will not only be found useful, by the builder and plumber, but which may well be considered a good investment by the householder, who, by doing "odd jobs" for himself, tries to avoid the too frequent presence in his abode of those possibly much-maligned but certainly unpopular personages.

CERESIT.

THIS is a waterproofing material for cement, etc., much used by the German State and other authorities. It is a light-coloured paste, about the consistency of butter, and may be made into a milky emulsion with ten to twelve parts of water. With this milky fluid, instead of with water, the dry mixture of cement and sand is worked into a plastic state.

The proportions run about one sack of 50 kg. (= 110 lb. of cement) and three of sand to 2½ kg. of the ceresit. Four cubic metres (141·2 cubic ft.) of wet mortar to about 25 kg. (55 lb.) of ceresit are needed; or, reckoning on the amount required to cover a given surface to a given thickness we have:—

Per square metre,	2 cm.	thick,	0·5 kg.
"	3 "	"	0·75 "
"	4 "	"	1 "
Per square yard,	0·5 in.	thick,	1·1 lb. av.
"	0·75 "	"	1·65 "
"	1 "	"	2·2 "

The mortar is handled and applied just like any other of the same consistency and for the same purpose.

When it is required to keep out ground-water the sole—*i.e.*, the concrete or other surface covering of the whole area—must be strong enough not to be displaced by the weight of the building. The best material is a concrete of gravel or coarse pebbles; but where the water pressure and volume are not very great rolled broken brick will do, laid perhaps somewhat low in the centre, or several layers of brick-breaking joint may be used.

The bricks should be laid in cement mortar, or, if there is much water, in ceresit mortar, being thoroughly wetted down just before laying. The requisite thickness of sole depends on the pressure and volume of water, and on the size of the cellar, say, on an average for a compartment 4 × 5 metres, and 1 metre water pressure, a concrete sole 20 cm. thick, made of one part cement, two of sand, four to five of gravel or fine broken stone.

The foundation walls must be thick enough to make cracking impossible.

In waterproofing the walls for average water pressure 2·5 cm. to 3 cm. (1 in. to 1·2 in.) thick of plaster is sufficient. The walls should be thoroughly cleaned before plastering (any old plaster should be removed first), the mortar joints scratched out and well wetted. The plaster is then applied in several layers, well trowelled together, and finished by dusting with dry cement or

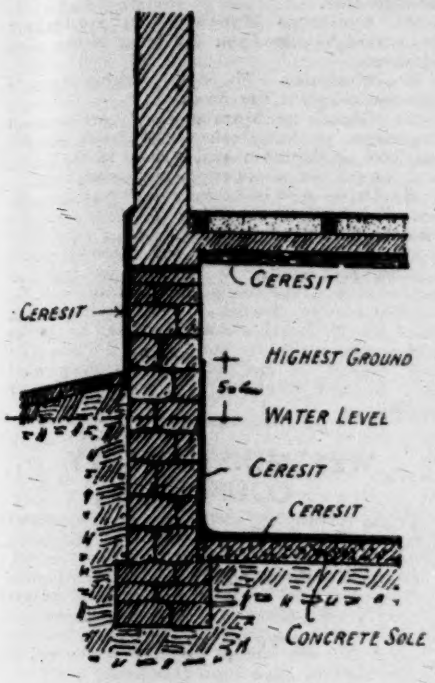


Fig. 1.

swabbing with very thin cement mixed in ceresit milk. When the water pressure is very considerable then the plaster may be 4 cm. (1·6 in.) thick below and thinned down as it goes upwards. This plaster should extend about 20 in. above the highest possible water level (Fig. 1).

The floor is to be treated with ceresit mortar, 3 cm. to 5 cm (1·2 in. to 2 in.) thick, applied, as the wall plaster was, in several well-trowelled layers. Before applying the ceresit the sole should be thoroughly cleaned, well wetted, and then swabbed with cement water. All corners and joining places of wall and floor should be rounded.

During the work of waterproofing, and for four to six days after (day and night), nay water which may be flowing must be kept away. As a rule, a hole in the concrete sole, in which the water can collect, and from

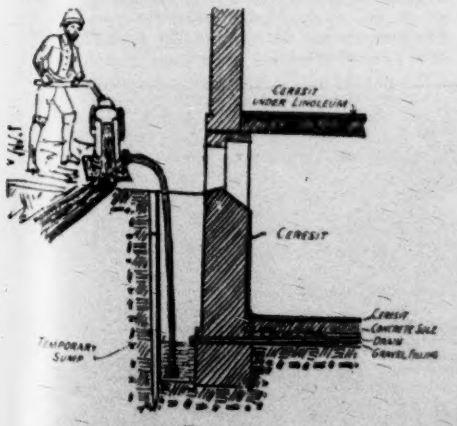


Fig. 2.

which it may be pumped, will suffice. When it is an important building it is best to have a regular drainage (Fig. 2).

In boiler-rooms, smoke passages, etc., the ceresit should be protected from the heat. This is best done by two layers of tiles (Fig. 3).

The insulating layer should not be penetrated by any iron parts, as hooks, hinges, etc.

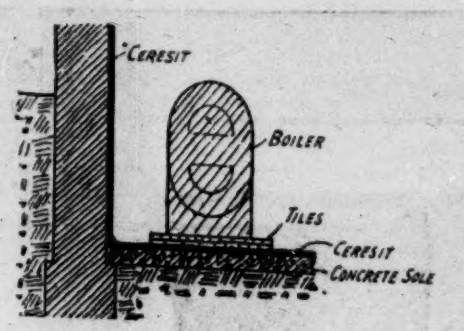


Fig. 3.

Solid stairways should not be built until the floors and walls below them have been treated with the ceresit mortar. The steps should not go through the insulating layer.

Where the ground water is very slight in quantity, and it is only a matter of protection against dampness from the earth and air, it will be sufficient to give the sole only about 3 cm. (1·2 in.) and the walls about 2 cm. (0·8 in.) of insulating plaster. When it is an old building the old mortar coat must be removed (or at least roughened) to give the new one a good hold; and the wall should be well cleaned before the insulating layer is applied.

On the weather side the walls should be protected inside and out, else there will be danger of fungus, mildewed wallpaper, scaling off of the plaster, etc. A thickness of 1·5 cm. to 2 cm. (0·6 in. to 0·8 in.) of 1 : 3 concrete mixed up with ceresit suffices. The plaster should be laid on in several layers and well worked in.

The ceresit permits the use of colouring materials, and even oil paint, after a very short time.

Where exterior plaster is out of the question, as in ornamental brickwork, etc., of course, the waterproof layer must be internal only, of the same thickness as for the outer side, but with a fat lime plaster layer about 3 mm. to 5 mm. (0·12 in. to 0·2 in.) thick to take up any moisture of condensation. Old lime plaster should be first removed.

When there is filled-in wooden framing the

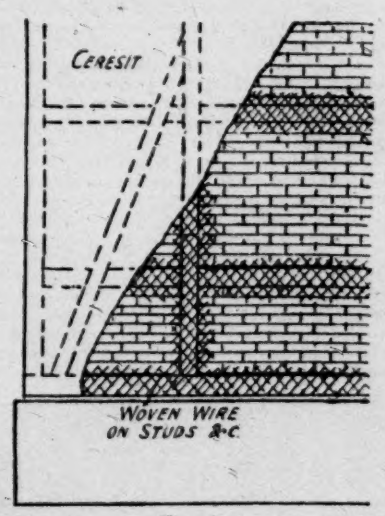


Fig. 4.

wooden portions should be covered with woven wire (Fig. 4).

For insulation of horizontal surfaces from moisture it is claimed for ceresit that, in the first place, ordinary masons can make and apply the protecting material without calling in the help of workmen skilled in asphalt work, with their special plant; and, in the second, that the insulation can be effected, if necessary, a little at a time, just as fast as the masonry is completed; and, in the third place, that the ceresit, in contrast to asphalt slabs, etc., makes a firm bond with the masonry, and the strength of the latter is in no way lessened, as is the case where the foundation and the upper work are separated by asphalt paper. It suffices to use 2 cm. to 3 cm. (0·8 in. to 1·2 in.) of the ceresit mortar in the proportion of one volume of cement and three of sand, mixed up with the ceresit "milk."

For terraces and balconies there must be sufficient provision for allowing the water to flow away. This can be done by giving the concrete surface itself slope, or by making the layer of ceresit mortar thicker at that side from which it is desired that the water shall flow; 3 cm. (1·2 in.) is the proper thickness to be applied to roughened and cleaned surfaces and well smoothed. The mix can be 1 : 3 with ceresit "milk." Meeting points of floor and wall are to be well rounded out; and it is better to carry the cement up about 8 in. from the floor. As soon as laid the layer is to be covered hand high with sand, which is to be let stand a week and damped down every day, then removed. This is to prevent too rapid drying and consequent cracking.

LABOUR IN THE COLONIES.

FROM the *Supplement to Circulars* issued from the Emigrants' Information Office, 34, Broadway, Westminster, S.W., we learn that in Sydney and suburbs, *New South Wales*, the furniture and iron trades have been fairly well employed, and competent men in these trades and strong railway labourers can get work. There is a good demand at Orange and Young for carpenters, bricklayers, painters, and plumbers. In *Victoria* competent mechanics will have little difficulty in securing employment. In *South Australia* work of nearly all kinds is plentiful, and a large amount of money is being spent on public works. There is a good demand for plasterers, cabinet makers, masons, galvanised iron-workers, carpenters, joiners, brickmakers, coppersmiths, sheet-metal workers, brass-finishers, and boiler-makers. In *New Zealand* the engineering, wood-working, building, and unskilled labour have been fairly busy, and are likely to improve at this season. The building trades of *Johannesburg* continue to be active in most branches, but the supply of labour is quite sufficient; there is no improvement in the engineering trades. There is no demand for more labour at *Pretoria*. At *Cape Town* there is no demand except for a few skilled plumbers, cement workers, and furniture makers. At *Durban* the only demand is for a few good plasterers, tilers, and plumbers.

THE TRADES DISPUTES ACT.

THE annual general meeting of the Glasgow Building Trades Exchange, Ltd., was held in the office, 67, Hope-street, on the 25th ult. Colonel Robert J. Bennett presided.

The Executive Council's nineteenth annual Report—for the year ending September 30—stated that the Council had continued to afford the Employers' Parliamentary Council every assistance in their power in their endeavour to force legislation in the direction of suppressing or limiting picketing, subjecting all unions to the ordinary law of the land, and suppressing as unlawful combinations federations of unions for the purpose of "paralysing the country" by means of a general strike. To this end the Executive, having with other associations signed the memorial to the Prime Minister, thereafter addressed a communication to him urging him to receive a deputation on the subject. The Prime Minister up till now had declined on account of pressure of business, and it was undoubted that the Government have sufficient business on hand to occupy them for some time. The Council had been approached urging that items should be introduced into schedules to cover the increased cost of workmen's compensation insurance and insurance under the National Insurance Bill. The matter was fully discussed in connexion with the revision of the regulations for measurement of mason-work, and it was resolved that these charges must be treated as oncost in the same way as office rent, wages, etc., that they must be taken into account by the contractor in quoting, and that no special item should be introduced into schedules to cover same. The following members of Council who retire at this time were re-elected:—Messrs. Robert J. Bennett, Matthew Henderson, William Howatt, John Keppie, James Goldie, James A. Ferguson, and R. A. MacGillivray.

On the motion of the Chairman, seconded by Mr. Matthew Henderson, the Report was adopted.

ACCIDENT AT KINGSWOOD.

A builder's scaffolding in front of a new picture palace, which is being erected at Kingswood, near Bristol, suddenly collapsed and threw fourteen workmen on to the ground. Some of the men had limbs broken and others were found suffering from internal injuries.

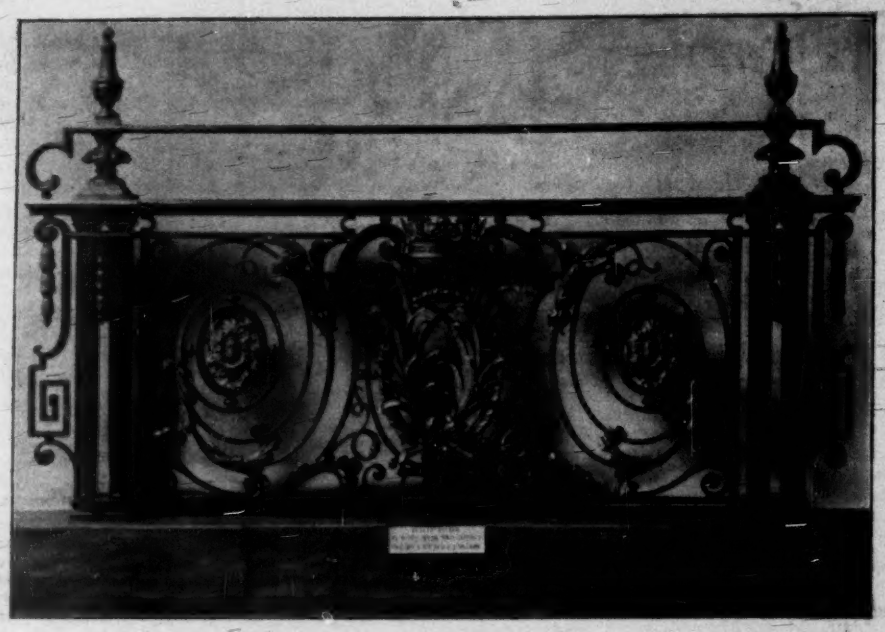


Fig. 1. Balustrade in Wrought-iron and Bronze, New Wesleyan Hall.

THE WESLEYAN HALL, WESTMINSTER.

THESE illustrations depict typical details of interest. Nos. 1 and 3 show examples of the ornamental metalwork in the interior of the building, the last-named representing one of the handsome lamp standards which occur in the entrance hall. These are executed in iron and bronze, and are placed on shaped Roman marble bases attached to the wall, and they are extremely effective. The above illustration shows a portion of balustrading occurring on the staircase landing, and this is executed in iron with bronze enrichments. The detail is exceptionally good, and the execution exhibits workmanship of the first class, which will bear very close inspection.

The illustration in Fig. No. 2 shows one of the four large trophies which occur at the base of the dome, these measuring 24 ft. 6 in. by 13 ft. 6 in. They were executed in lead, and cast from models prepared by Mr. H. Poole from the architects' designs, and carried out by Messrs. J. W. Singer & Sons, of Frome, who also executed the ornamental ironwork mentioned above. The lead trophies are very happily placed on the dome, and must be considered very successful both as regards general composition and also as regards detail.

TRIBUNAL OF APPEAL UNDER THE LONDON BUILDING ACT.

Allen & Norris *v.* London County Council.

ON October 24 the Tribunal of Appeal under the London Building Act sat at the Surveyors' Institution, Westminster, to give their decision in the appeal of Messrs. W. G. Allen & H. G. Noris, builders, against the certificate of the Superintending Architect of Metropolitan buildings defining the general line of buildings on the western side of the street known as Fulham Palace-road, between Queensmill-road, for the building known as 206, Fulham Palace-road. Mr. Courthope Munroe appeared for the appellants, and Mr. Daldy for the London County Council.

The facts of the case, as reported in the *Builder* of October 11, showed that the appellants are developing a building estate on the western side of Fulham Palace-road, and first erected four shops, of which one is No. 206.

The Superintending Architect defined the general line of buildings in such a way that it would have cut off a portion of these shops, and thereupon the builders appealed, and the Tribunal found there was no general line of buildings in that portion of the street, but said that the presence of the four shops might possibly form the building line in the future. The appellants, without applying to the Superintending Architect to fix a general line, proceeded to build a number of other shops, which were the same distance from the edge of the curb as the four shops, but owing to the contour of the road they were set some 2 ft. behind the first shops. The Superintending Architect subsequently fixed the general line of buildings by taking a certain length of the road, the effect of which would be to cut off a portion of the last terrace of shops.

Mr. Hudson (Chairman of the Tribunal) now said the Tribunal felt it desirable to call the parties together, not merely to listen to their decision, but to see if they could indicate for the future what ought to be the general line of buildings with regard to the road, so as to avoid those constant appeals to them which did not seem to be worthy of the time and trouble they involved. With regard to the present appeal they had come to the decision that there was no general line at all. They had tried in every way to fix a general line, and had failed to come to any general conclusion. The Superintending Architect made a very good try, but the Tribunal did not like it, and they had come to the conclusion that there was no general line with regard to this particular part of the road. They made no order as to costs. What they desired to indicate as to the future was that the general line of buildings should be the continuation of the line from the south-eastern end of the new buildings. This in effect would mean a line parallel with the Fulham Palace-road to Silverton-road. They were not prepared, however, to say that was the general line. Having indicated that much, they thought that Messrs. Allen & Norris ought to apply to the Superintending Architect to define the line. The Tribunal could only indicate what would be the probable line they would find, and, having done that, the parties ought to be able to settle what the general line was without difficulty. Mr. Daldy would see that it was undesirable to have these constant appeals. The Superintending Architect had shown a perfectly conscientious desire to fix a line, but it was not a general line, and the Tribunal could not find it so. The new buildings could be made the basis on which a general line might now be fixed by the prolongation of the south-eastern end up to Silverton-road. They recognised there was some difficulty in settling the general line of buildings between Silverton-road and Crabtree-lane, because the church stood further back from the road.

Mr. Courthope Munroe said he took it the Tribunal meant the prolongation of the existing buildings as such—taking what the appellants said was the front.

The Chairman said a block of buildings was at present shown on the plan of the Superintending Architect, and if they took from the south-east end they would find there was a straight line.

Mr. Courthope Munroe: You are taking your straight line from the front of the shop windows.

The Chairman: We have nothing here to indicate what is the front.

Mr. Courthope Munroe said there was an argument as to whether the front of the windows or the main wall was to be the front, and he did not want any misapprehension.

Mr. Daldy said he hoped the Tribunal would not decide that the shop window was the effective front.

The Chairman said it cut both for and against Mr. Daldy. If he took the front of the window it cut the main building back.

After further discussion the Chairman said what the Tribunal meant was that no bricks and mortar should be put beyond the line they had marked on the plan as indicating what they thought might be the general line of buildings.

WESTMINSTER CITY COUNCIL.

AT the fortnightly sitting of the Westminster City Council on October 24 the following matters were dealt with:—

Engineer's Estimate.—It was decided that in future, as far as practicable, estimates by the Council's officers of the cost of supplies or works to be supplied or executed for the Council by contractors be not made public before tenders have been obtained.

Poland-street Workhouse Site.—The Housing Committee reported that they were engaged in the preparation of a scheme, pending the result of an inquiry by the Local Government Board, for the erection of working-class dwellings on this site.

Housing Scheme.—The same Committee reported that their attention having been drawn to a possibly available site in the vicinity of the City of Westminster dwellings, Regency-street, suitable for a housing scheme, they had directed that preliminary negotiations be entered into with the owner.

Exhibition-road.—In connexion with the recent purchase by the Royal Geographical Society of Lowther Lodge, and the proposed rebuilding of the premises, the Improvements Committee recommended the expenditure of 2,350*l.* for the acquisition of land to round off the corner of Exhibition and Kensington roads.—Agreed.

Piccadilly "Dip."—In regard to the proposal for doing away with the "dip" in Piccadilly, which was before the Council at its last sitting, it was agreed to urge the London County Council to sanction the rebuilding of the Sutton Estate property to a height of 81 ft., as had been suggested, so that any further scheme for raising the roadway should not be prejudiced.

Fig. 2. Sketch Model for Lead Trophy at the Spring of Dome, New Wesleyan Hall.

LAW REPORTS.

CHANCERY DIVISION.

(Before Mr. Justice PARKER.)

Heavy Claim by and against Contractors: J. Aird & Co. v. the Tanjong Pagar Dock Board.

THE hearing was resumed of this case last week in which the plaintiffs claim from the defendants 500,000*l.* as damages for alleged breach of contract in connexion with the construction of a wet dock at Singapore. Plaintiffs, who are the well known contractors, allege that the defendants misrepresented the conditions under which the contract was to be carried out, and therefore that they were justified in repudiating the contract. Defendants denied these allegations, and served a notice on the executors of the late Sir John Aird, who in his lifetime was a member of the plaintiff firm and a party to the contract, making a claim against his estate of about 1,000,000*l.* as damages for breach of contract.

Mr. Upjohn, K.C., Mr. Macassey, K.C., and Mr. Schwann appeared for the plaintiffs; and Sir R. Finlay, K.C., Mr. George Cave, K.C., Mr. Romer, K.C., Sir Hugh Fort, Mr. Mathews, and Mr. Hull for the defendants.

Mr. Upjohn, continuing his opening address on behalf of the plaintiffs, having dealt with the issue of alleged misrepresentation by the defendants, so as to induce the plaintiffs to enter into the contract, said that the engineers had wholly miscalculated the quality of the mud to be dealt with, and its effect upon the walls they had designed. Every part of the walls they had designed were really impossible of performance, because they estimated that the mud was stable—a more or less solid stratum—whereas it was admitted that where they estimated the mud to have an angle of repose of one and a half to one, they must consider it as having at least an angle of three to one, and in some places an angle of six or seven to one, and even in parts twelve to one at the greater depths. They had admitted in the correspondence that several walls were not stable, and what was true of the walls was *à fortiori* true of getting through this mud in the operation of sinking a timber trench. When they admitted that the walls were not stable they really admitted that the whole design was not capable of performance. If the plaintiffs were right in their submission that the contract, on its true construction, was to sink a trench timbered in runners and settings, there could not be the slightest dispute that the work would be impracticable.

The question of the impossibility of the construction of the walls under the contract was very important. The contractors found that in places where the contract walls were to be it was impossible to get down to the "hard" even by employing the heaviest timbering known to engineers. Plaintiffs did not shrink from incurring enormous expense, trusting implicitly to the reputation of the engineers as a fair and honourable firm, and that they would see that the contractors were fairly and honourably paid for the work done.

Having explained in great detail the difficulties the plaintiffs experienced owing to the action of the mud and the impracticability of constructing the walls of the dock under the terms and conditions imposed by the contract, and the impossibility of doing the work except at an enormously increased expense, the learned Counsel referred to other issues raised in the action, and said that the plaintiffs' case, broadly speaking, was that the work ordered was so different in character as to be wholly outside the contract. The plaintiffs were rather disappointed that the defendants had not put in a counterclaim, as they would have liked to have threshed out the matter altogether.

Sir R. Finlay said that the counterclaim was not framed yet, but he thought there need not be another action, as the result of the present case would probably decide the matter.

Mr. William H. J. Stacey, the engineer of the plaintiff firm, was the first witness. He gave evidence that he had received instructions to prepare drawings for submission to Mr. Warren, the resident engineer, showing the method of timbering it was proposed to adopt in the trenches. He said there was no defect in the timbering or workmanship, and no failure on the part of the contractors. All the timber used was suitable for the sheeting and piling, and the frames were put in directly the excavations were made. So far as he knew, the work did not suffer from want of proper supervision.

[The case had not concluded as we went to press.]

COURT OF APPEAL.

(Before the MASTER OF THE ROLLS and Lords Justices FARWELL and HAMILTON.)

Eastbourne Right of Way and Trespass Action: White and Another against the Grand Hotel, Eastbourne, Ltd.

THE hearing of this case upon the plaintiffs' appeal from a judgment of Mr. Justice Joyce was concluded on October 28.

The plaintiffs, Mr. F. A. White, J.P., and Mr. Thomas Fenn, brought the action to restrain by injunction the defendant company from permitting any part of a private road (the soil of which belonged to Mr. White) leading from Southcliffe-mews to Silverdale-road, Eastbourne, to be used as a means of access to and from the defendants' motor garage, St. Vincent's Lodge, and for an order upon the company to reinstate a wall dividing the property of the parties, which the defendants had interfered with, into its former condition, the plaintiffs alleging that it was a party wall, which, however, the defendants denied. Mr. White, as the owner, and Mr. Fenn, as the tenant of Nos. 1, 4, 5, 6, and 7, Southcliffe-mews, complained that the defendants were using the road in question in such a way as to constitute a nuisance, but this the defendants denied. Mr. Justice Joyce held that, by reason of an agreement made between the predecessors in title and the parties, a general right of way was granted to the defendants for their vehicles along the road, and that there was no express restriction or limitation of that right of way. He also held that upon the other issues in the case the plaintiffs had failed to substantiate their claim, and dismissed the action with costs, and from this decision the plaintiffs now appealed.

At the conclusion of the arguments of Counsel, their Lordships held that the defendants had a right of way over the road in question without restriction or limitation, and dismissed the appeal on that part of the case. They, however, held that the wall, being a party wall, which was owned by the parties as tenants in common, the defendants had no right to pull it down or to alter the position and size of the gateway, and they accordingly made an order upon the defendants to reinstate the wall to its former condition. Upon this part of the case, therefore, the appeal was allowed. Plaintiffs were awarded the costs of the trial, except so far as they had been increased by the claim upon which they had failed and half the costs of the appeal.

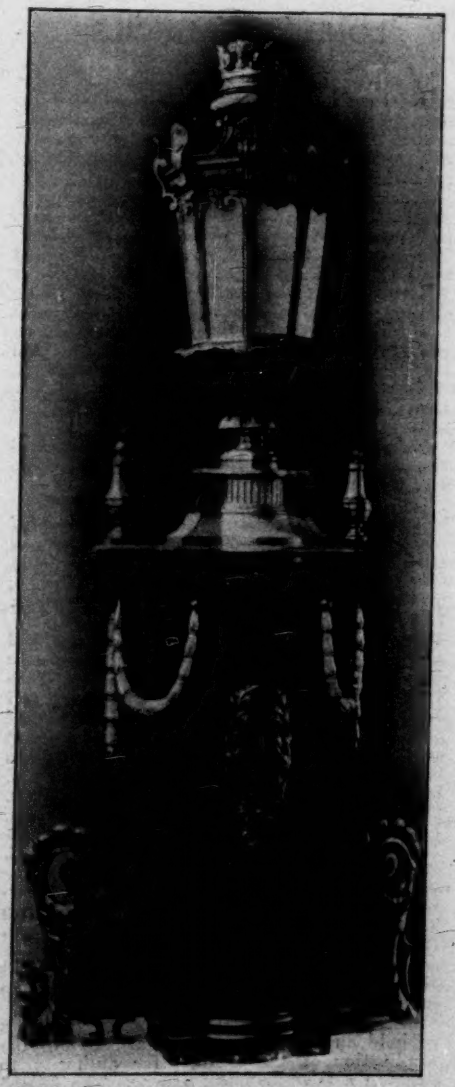


Fig. 3. Standard in Iron and Bronze, New Wesleyan Hall.

KING'S BENCH DIVISION: DIVISIONAL COURT.

(Before the LORD CHIEF JUSTICE and Justices CHANNELL and AVORY.)

A Sea Wall Dispute.

THE Court on the 24th ult. heard an interesting dispute about the liability of the Holme Cultram (Cumberland) Urban District Council to pay Mr. John Dawson, a builder and contractor, for "extras" in connexion with his contract to build a sea wall at Silloth.

The matter came before the Court on a case stated by an arbitrator, and it appeared that in 1908 Mr. Dawson, who carries on business at Whitehaven, secured a contract to build the sea wall for 4,695*l.* The work was commenced on August 10, 1908, and it was a clause of the contract that no extras were to be done without the order, in writing, of the Council. In September, 1908, unusually high tides caused damage to part of the wall which was completed, and this necessitated the carrying out of extra work to protect the wall. In consequence of a decision arrived at by the contractor and Mr. Bell, of Carlisle, who at that time was nominated as arbitrator, and Mr. Armstrong, of Carlisle, the surveyor, Mr. Dawson was empowered to lay down a large quantity of bags of cement to prevent the sea washing more of the soil away. These bags formed an "apron," and the cost of the work was 540*l.* for materials and 75*l.* for labour. Later in the month further high tides caused more damage, and soil from the wall to the extent of 200 yds. was washed away, and the foundations of the wall were laid bare in some places. A lot of stones and cobbles were placed at the foot of the wall, the cost of that being 120*l.* Both these jobs were done at the order of the surveyor. Later, Mr. Armstrong verbally ordered a new road, for which he gave a certificate for 60*l.* That sum had been paid, together with the contract price of 4,695*l.*, but the claim for extra work had been disputed by the Council, who raised the defence that the contractor had received no written order for them to carry out the work, and also that, each item costing over 50*l.*, a written order should have borne the seal of the Council as stipulated by the Public Health Act.

After hearing Counsel for both parties, the Lord Chief Justice said the case raised an important point, and the case would go back to the arbitrator with instructions to reconsider it. If the work carried out extra to the contract was, in the opinion of the arbitrator, in the nature of alterations or additions to the contract, then the absence of a written order was fatal to the claim, but if they were not alterations and additions the absence of a written agreement would be no bar to the claim; but then the second question arose, viz., the absence of the seal of the Council. If when the orders were given it was in the contemplation of the parties that the extras would cost more than 50*l.*, then the seal should have been affixed to a written order of the Council. If, on the other hand, the work was given out as day work, it would not come within the section which required the seal of the Council.

Justices Channell and Avory concurred, and the case was sent back to the arbitrator.

Contractor's Claim against Corporation: A Sewage Undertaking.

MR. JUSTICE PHILLIMORE, in the King's Bench Division, sitting without a jury, heard on Saturday, October 26, and on Wednesday, October 30, an action brought by Mr. J. Riley, contractor, of Rose Cottage, Gloucester-road, Cheltenham, against the Corporation of Sutton Coldfield, claiming about 5,000*l.* in respect to work done and damages for alleged breach of contract in connexion with a sewage undertaking at Sutton Coldfield. The defendants denied that the plaintiff was entitled to the amount claimed.

For the plaintiff Mr. Hudson, K.C., appeared, and Mr. Sankey, K.C., represented the defendants.

Mr. Hudson, in opening the plaintiff's case, said that Mr. Riley's contract with the Corporation in regard to the sewage works was dated August 16, 1909. The work comprised the building of a sewer about 6½ miles in length. In March, 1911, Mr. Riley was proceeding with the work, and was engaged on the last section.

During the progress of the work an immense number of alterations were made, in respect to which the plaintiff contended that he should

receive written orders. Plaintiff said that in February and March, 1911, he was still pressing for these written orders, and ultimately he informed the Corporation that he would not proceed with the work until he received those orders. The Corporation said they would carry out the remainder of the work themselves, and the plaintiff issued a writ asking for an injunction to prevent them from doing this. The Court ordered that the plant, etc., belonging to the plaintiff should be valued by Mr. Wilcox, of Birmingham, before the Corporation took the work over. In an affidavit by the plaintiff, read by Counsel, plaintiff said that all through the work the specifications were altered by the Corporation's Engineer, Mr. Clarry, this leading to much extra work being done. Plaintiff also said he had evasive replies when he applied for written orders for the work, and he said he had always been ready to carry out the contract, but he was not bound to carry out extra work without the written order of the Corporation.

Mr. Hudson went on to say that there was an affidavit by Mr. Clarry, in which he maintained that any extra work executed by the plaintiff had been measured and paid for by the Corporation. He also said that the alterations and additions were of a simple character, that they had been made for the plaintiff's convenience, and he denied that when asked for orders in writing he gave evasive replies, as alleged. Counsel further stated that there was a counterclaim by the defendant Corporation for alleged breach of contract by the plaintiff. The plaintiff was entitled to 10,145*l.* as affecting the contract work completed. A sum of 8,865*l.* had been paid, and the Corporation had kept 1,000*l.* retention money, and plaintiff's claim was for extras done.

The plaintiff complained (said Counsel) that owing to the alteration of the specifications he had to contend with extra difficulties, and when he asked for written instructions the answer was sent to him: "Keep to your contract."

At this point the Court adjourned, and when the hearing was resumed on Wednesday Mr. Justice Phillimore asked Mr. Hudson to explain exactly what relief he (plaintiff) wanted, pointing out the fact that the case was one of complexity.

Mr. Hudson said that plaintiff asked for damages in respect to the wrongful taking possession of the works by the Corporation, and such damages should cover the payment for work done.

Mr. Sankey, K.C., then submitted that the plaintiff could not recover for alleged breach of contract, as this was committed on March 25, and the writ was dated March 6.

Counsel's contention led to a long discussion, and eventually a consultation took place between the parties, which resulted in the case being settled. The terms were judgment for the defendants, who withdrew their counterclaim, each party to pay its own costs, the defendants, "as a matter of grace," to pay the plaintiff 500*l.* out of the retention money, the settlement to be in mutual and final satisfaction of all claims between the parties, the plaintiff withdraws all imputations against the defendant and Mr. Clarry, and the defendants make no charges against the plaintiff.

His Lordship signified consent.

CHANCERY DIVISION.

(Before Mr. Justice NEVILLE.)

Pumping Operations and the Stability of the Hôtel Métropole:

The Attorney-General against the London Electric Railway Company.

THIS case came before the learned Judge on Friday, October 25, upon a motion which had previously come before the Vacation Judge, in which the Attorney-General, at the relation of the Gordon Hotels, Ltd., asked for an interim injunction to restrain the defendant company or its contractors, etc., from pumping or making use of similar modes of removing water from the works of the defendants at the present time being carried on in connexion with the defendants' undertaking, situated in the Parish of St. Martin-in-the-Fields, in alleged contravention of the provisions of the London Electric Railway Act, 1911, which gave the defendant company power to construct an underground tube railway to extend and connect their Charing Cross and Hampstead Railway, and their Bakerloo Railway at Charing Cross, with the underground station at Charing Cross of the Metropolitan District Railway. The plaintiffs' case was that the continuous pumping of the water, which the defendants met with underground near the end of Northumberland-avenue, if allowed to proceed would prejudicially affect the stability of the Hôtel Métropole in Northumberland-avenue, which belonged to the relators, and that what the defendants were doing was expressly forbidden by the Act of 1911.

Mr. Felix Cassel, K.C., and Mr. B. B. Ponsonby appeared in support of the motion; and Mr. Bramwell Davis, K.C., and Mr. L. Mossop for the defendant company.

During the course of the discussion it transpired that the defendant company had done no pumping at the point in question since October 21, and that any pumping that had been done since that date was done by the Metropolitan District Railway, under, as it was alleged, their statutory powers.

In the result it was arranged that the motion should stand over till the trial, the defendants giving an undertaking not to resume pumping operations without giving seven days' previous notice in writing to the plaintiffs.

OBITUARY.

Mr. W. J. Laidlay, LL.M., R.B.A.

Mr. William James Laidlay, F.R.G.S., of Circus-road, St. John's Wood, Drumore, and the Oxford and Cambridge Club, who died at Freshwater, Isle of Wight, on October 25, aged sixty-six years, was a son of the late J. W. Laidlay, of Seacliff, Co. Haddington, and Drumore, N.B. He was educated at Loretto and Peterhouse, Cambridge. He was called to the Bar by the Middle Temple, and after six years' practice as a member of the Faculty of Advocates, Scotland, he went, in 1879, to Paris, where he studied in the Ecole des Beaux-Arts, and was a pupil of Bouguereau and Carolus Duran. He was a frequent exhibitor, 1881-96, at the Royal Academy and the Salon, and, 1888-1904, at the New Gallery; in 1885 he took a prominent part in the founding of the New English Art Club, and, in 1902, became a member of the Royal Society of British Artists. He was the author of "The Royal Academy: Its Uses and Abuses," 1898; "Lena Laird," 1901; "The Origin and First Two Years of the New English Art Club"; and "Art, Artists, and Landscape Painting."

LONDON COUNCILS.

Acton.—It has been decided to take under consideration the prevention of flooding other than by the construction of a northern relief sewer. The Council is to press for a by-law to provide for 500 ft. super. air space at the rear of buildings.

Barking.—The tender of Messrs. Parsons & Parsons, Ilford, has been accepted at 629*l.* for constructing roads at the Ripple School. The Surveyor has been instructed to proceed with the making-up of a trial section of Wilmington-gardens with tarred slag macadam, subject to the owner giving an undertaking to bear the cost. The following plans have been passed:—Mr. George Clark, six houses and one shop, Suffolk-road; Mr. W. Stewart, cinematograph theatre, Broadway; Messrs. Gross, Sherwood, & Heeld, Ltd., offices and laboratory, Jenkins-lane.

Chiswick.—For making-up Grantham-road the tender of Mr. J. Ball, Chiswick, has been accepted at 1,237*l.*

Croydon.—The open-air bath at South Norwood is to be lengthened to 75 ft., and roofed in by the County Council at an estimated cost of 4,000*l.* The scheme also provides for additional dressing-boxes, clubrooms, lavatories, first-class slipper-baths, and a new laundry. Land is to be purchased in Grange Park-road, Thornton Heath, and plans, specifications, and estimates prepared for the erection of baths thereon. This scheme provides for a bath 75 ft. in length, with galleries, lavatories, and laundry. A new road is to be constructed connecting Crowther and Bichanger roads, at an estimated cost of 650*l.* The following plans have been passed:—Mr. A. Bagge, Catford, four houses, Melfort-road, Norbury; Mr. W. B. Coomber, 65, Pemdevon-road, eleven houses, Leander-road; Mr. A. W. Dawson, Teevan-road, three houses, Zermatt-road; Mr. E. Bates, London, E.C., fourteen houses, Addiscombe-avenue, and fifteen houses, Highbarrow-road; Mr. D. Weightman, 78, North-end, two houses, Christchurch-road East, and five houses, Godstone-road; Mr. P. Richardson, 30, Addiscombe-avenue, seven houses, Pollard's-hill North, one house, Pollard's-hill East, also mission hall, Suffolk-road, South Norwood.

Finchley.—The Local Government Board is to hold an inquiry on November 5 into the application of the Council for authority to prepare a town-planning scheme. The following plans have been passed:—Mr. J. Stonnell, four shops, ten houses, and one crèche, Squires-lane; Mr. T. Osborne, six houses, Woodlands-avenue; Mr. S. W. Tod, motor garage, Netherland, Holly Park-gardens; Mr. C. W. Scott, four houses, Arden-road; Messrs. Hamiltons, four houses, junction of Holly Park and Windermere-avenue; Mr. F. W. Walker, four houses, Finchley-way. Plans have been lodged as follows:—The Co-partnership Tenants, Ltd., twelve houses, Addison-way; twenty-eight houses, Denman-drive; the Manor Farm Dairy, Ltd., dairy and offices, High-road, East Finchley; Mr. W. T. Howard, nine houses, Finchley Park; Mr. A. P. Joyce, additions to factory, King-street, East Finchley; Mr. E. J. Abrahams, buildings, rear Cambridge and Wisbech Houses, Great North-road, East Finchley.

Finsbury.—Portions of Lever-street and Dingley-road, St. Luke's, are to be improved and widened at respective estimated costs of 495*l.* and 109*l.*

Ham.—Estimates are to be prepared by the Surveyor for the erection of artisans' dwellings.

Hanwell.—Instructions have been given the Surveyor to prepare plans and estimates for kerbing and paving with artificial stone a portion of the footway on the south side of Uxbridge-road. The tender of Messrs. Heenan & Froude, Ltd., has been accepted, at 1,333*l.*, for the erection of a two-cell dust-destructor.

Hemel Hempstead.—Plans submitted by Messrs. John Dickinson & Co. have been passed by the Rural District Council for the erection of an addition to their mills at Apsley.

Heston and Isleworth.—The General Purposes Committee report that the plan prepared by the Surveyor, showing a suggested route through Heston and Isleworth for the proposed new western approach road to London, was submitted to the Road Board for their consideration at a recent interview with representatives of the Council. At this interview it was intimated that the Board had come to the conclusion that the construction of a by-pass road through Brentford would be infinitely preferable to the widening of the existing road, and that in those circumstances the Board would not be prepared to contribute towards the widening of the Brentford High-street. Generally the Council's scheme was approved, and it was agreed that the route suggested would not be detrimental to the Board's original proposals, though the advisability of adopting the proposed entry to the new road from the Chiswick High-road was questioned. If the scheme is adopted, the Committee state the Board will not contribute more than one-half of the cost of carrying it out, which cost is estimated by the Surveyor a 250,000*l.* It was resolved to urge the Middlesex County Council and other influential bodies and owners of land on the route to support the scheme. The following plans have been passed:—Messrs. A. & F. Pears, Ltd., building at Orchard Works, Isleworth; Mr. W. Hogbin, six houses, Standard-road, Hounslow; Messrs. H. Somerford & Son, entertainment hall, Gumley House, Isleworth; Mr. H. W. Nicholls, four houses, Church-road, Spring-grove.

Ilford.—The following plans have been passed:—Mr. E. T. Dunn, kinema theatre, Ilford-lane; Messrs. Rawlins, Culver, & Co., motor garage, Eversley-terrace; Mr. C. W. Duly, eleven houses, Haslemere-road; Mr. G. S. Valentin, cinematograph theatre, Cameron-road, Seven Kings.

Shoreditch.—The tender of the Improved Wood Pavement Company, Ltd., has been accepted for laying wood-paving in Baring-street and New-street, between New North-road and Rosemary Branch Bridge, at 7s. 9d. per yard. The approximate area to be paved is 1,400 yds. super.

Walthamstow.—A portion of Greenleaf-road is to be coated with bitumastic material, and the tender of Messrs. H. V. Smith & Co., Ltd., has been accepted for supplying same, at 2*l.* 3s. per ton. Directions have been given to the Engineer to prepare plans, specifications, and estimate for making-up Sylvan-road and completing the making-up of Beech Hall-road; also for the erection of conveniences in Higham-hill Recreation Ground and St. James' Park. A scheme prepared by the Engineer has been approved for developing a large area of land at Higham-hill. Plans have been passed for Messrs. Allen Brothers for the erection of three houses in Malvern-avenue; also for Mr. A. G. Barton for a warehouse in Hale End-road. Plans have been lodged by Mr. A. J. Robinson and Mr. T. D. Baker, for seventy-nine houses in Beech Hall-road, and six houses in Shakespeare-road, respectively.

West Ham.—The Public Health Committee report that they are of opinion that it is desirable that a separate sanatorium should be provided for the Borough, and they have decided to direct the Borough Engineer and the Medical Officer of Health to make inquiries as to a suitable site for a permanent building. Plans and estimates by the Borough

(*Continued on page 526.*)

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xviii.; Auction Sales, xxiv. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.**

Competitions.

NOVEMBER 1.—**Ottawa.**—MONUMENT TO KING EDWARD VII.—Sketch models in plaster to be sent to the Director of National Art Gallery, Ottawa. Particulars from the Public Works Department, Ottawa (see p. 174, August 9).

NOVEMBER 4.—**London.**—REGENT'S QUADRANT.—The Committee appointed by the Lords of the Treasury to consider the design for completing the above wish to inspect the designs submitted in the *Builder* Competition, and the authors of those designs are asked to forward them to 1, Whitehall, London, S.W., by November 4. See advertisement (page iv.) in issue of October 25 for further particulars.

NOVEMBER 25.—**Newcastle-on-Tyne.**—SCHOOLS.—Limited to local architects. Particulars from the Education Office, Northumberland-road, Newcastle on-Tyne.

NOVEMBER 29.—**Langside, Glasgow.**—BRANCH LIBRARY.—Assessor, Mr. Alex. N. Paterson, A.R.S.A. Premiums, 50*l*., 30*l*., and 25*l*. Particulars from the Town Clerk, City-chambers, Glasgow.

NOVEMBER 30.—**Balham.**—SWIMMING-BATH.—The Wandsworth B.C. invite designs. See advertisement in issue of August 16. Particulars from Mr. P. Dodd, 215, Balham High-road, S.W.

DECEMBER 1.—**Soña.**—DESIGNS FOR A ROYAL PALACE AND LAW COURTS.—Particulars from the Commercial Intelligence Branch of the Board of Trade, Basinghall-street, E.C. (see p. 173, August 9, and p. 350, September 27).

DECEMBER 2.—**Carlisle.**—SCHOOL BUILDINGS, ETC.—Particulars from the City Surveyor, 36, Fisher-street, Carlisle.

DECEMBER 20.—**R.I.B.A. Competitions.**—All work for the Studentship and Prizes, 1913, must be delivered before 4 p.m. at 9, Conduit-street, W.

JANUARY 1, 1913.—**Dublin.**—MUNICIPAL BUILDINGS.—Assessor, Mr. Albert E. Murray, A.R.H.A. Conditions from the City Treasurer, Dublin. Deposit, 2*l*. 2s.

JANUARY 20, 1913.—**Rome.**—BRITISH SCHOOL AT ROME, SCHOLARSHIP IN ARCHITECTURE.—200*l*. per annum for three years. Particulars from Mr. Evelyn Shaw, 54, Victoria-street, S.W.

* FEBRUARY 3.—**Harrogate.**—SCHOOL.—The Harrogate Education Committee invite designs for a Council school in Skipton-road. See advertisement in this issue for further particulars.

MARCH 1, 1913.—**Rangoon.**—MUNICIPAL BUILDINGS.—The Committee of the Municipality of Rangoon invite designs for the new Municipal Buildings. Honoraria of 300*l*., 200*l*., and 100*l*. respectively for first, second, and third. See advertisement in August 2 and 30 for further particulars.

MARCH 1, 1913.—**Winnipeg.**—CITY HALL.—Particulars from Mr. A. Waugh, City Hall, Winnipeg. See page 509.

No DATE.—**Dursley.**—WORKMEN'S DWELLINGS.—The Parochial Committee of the Dursley R.D.C. invite designs for about thirty workmen's dwellings. See advertisement in issue of October 25 for further particulars.

No DATE.—**Jordanhill, Glasgow.**—PROPOSED TRAINING COLLEGE.—Limited to six firms, named in "Competition News," December 1, page 635.

No DATE.—**Motherwell.**—HIGH SCHOOL.—Dr. Burnet, assessor. Premiums 50*l*., 30*l*., and 20*l*.

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

NOVEMBER 2.—**Foxt.**—HOUSE, ETC.—Erection of a house, shop, and out-offices at Sandy Way, Foxt. Plans and specifications at Mr. J. Doughty's, Foxt, near Cheadle, Stoke-on-Trent.

NOVEMBER 2.—**Maidenhead.**—ADDITIONS.—For additions to the engine-house buildings at electric-light station in Braywick-road. Plans seen, and specification and quantities from Mr. P. Johns, Borough Surveyor, Guildhall, Maidenhead.

NOVEMBER 2.—**Willington.**—COTTAGES.—Erection of twelve cottages at Willington, for the Aged Miners' Homes Committee. Plans and specifications at Engineer's Office, Brancepeth Colliery, Willington.

NOVEMBER 4.—**Cleckheaton.**—VICARAGE.—Erection of a new vicarage for St. Barnabas's Church Hightown. Plans seen, and quantities from Messrs. Howorth & Howorth, architects, Old Bank-chambers, Cleckheaton.

NOVEMBER 5.—**Swindon.**—ALTERATIONS, ETC.—For alterations and additions to Olive House, Swindon. Plans by Mr. R. J. Beswick, M.S.A., Swindon.

NOVEMBER 6.—**London.**—DEMOLITION.—For demolishing 155 and 157, Peckham-rye, Peckham, S.E., for the Metropolitan Asylums Board. Drawing and specification by Mr. W. T. Hatch, M.Inst.C.E., M.Inst.M.E., Engineer-in-Chief, Office of the Board, Embankment, E.C. Deposit of 1*l*.

NOVEMBER 6.—**Slough.**—BUILDINGS, ETC.—For erection of buildings, furnaces, boilers, and chimney, etc., at the Council's pumping-station at Chalvey. Plans, specification, quantities, and form of tender at the Town Surveyor's Office, William-street, Slough. Deposit of 6*l*.

NOVEMBER 6.—**Winchester.**—ADDITIONS.—For alterations and additions to the Soldiers' Home, Hyde Close, Winchester. Drawings and specifications with the architect, Mr. B. D. Cancellor, 12, Jewry-street, Winchester.

NOVEMBER 7.—**Sheffield.**—EXTENSION.—Alteration and extension of the Technical School of Art, Arundel-lane. Drawings and conditions of contract seen, and quantities and forms of tender from the City Architect, Town Hall, Sheffield.

NOVEMBER 8.—**Holmfirth.**—ADDITIONS, ETC.—For alterations and additions to Holmfirth Hinchliffe Mill Council School. Plans seen, and specifications, with quantities, from the Education Architect, County Hall, Wakefield. Deposit of 1*l*.

NOVEMBER 8.—**Hoyland.**—ADDITIONS.—For additions to Hoyland Elsecar Council School. Plans seen, and specifications, with quantities, from the Education Architect, County Hall, Wakefield. Deposit of 1*l*.

NOVEMBER 9.—**Bolton.**—COTTAGE.—Erection of the park-keeper's cottage at the New Park, Greenlane, Great Lever, Bolton. Drawings seen, and quantities from Mr. E. L. Morgan, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Bolton, on deposit of 1*l*. 1s.

NOVEMBER 9.—**Bolton.**—PAVILION, ETC.—Erection of a consumption pavilion and an extension to the administrative block, at the Eastern Fever Hospital, Bolton. Drawings seen, and quantities from Mr. E. L. Morgan, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Bolton, on deposit of 3*l*. 3s.

NOVEMBER 9.—**Goole.**—ADDITIONS, ETC.—For the additions and alterations to Workhouse Hospital and other buildings. Plans and specifications seen, and quantities from the architects, Messrs. Thorp & Turner, Carlisle-street, Goole.

NOVEMBER 11.—**Ardara.**—HOUSE.—For erection of a market-house at Ardara, Co. Donegal. Plans and specification at the Board's Office, 23, Rutland-square, Dublin.

NOVEMBER 11.—**Birmingham.**—STABLING.—For the erection of stabling, etc., at the destructor works, Nechells, and also stabling, foreman's house, loose boxes, smithy, etc., at the destructor works, Lifford-lane, King's Norton. Drawings seen, and forms of tender, general conditions, and quantities from Mr. W. E. Ballard, A.M.Inst.C.E., District Office of the Department, Council House, Sparkhill, on deposit of 1*l*.

NOVEMBER 11.—**Margate.**—WATER-TOWER.—For repairs to the water-tower at Woodlands, near Wingham. Specification seen, and particulars from the Borough Engineer, 13, Grosvenor-place, Margate. Deposit of 2*l*. 10s.

NOVEMBER 11.—**Richmond.**—EXTENSIONS.—For extensions to the Public Baths, Parkshot, Richmond. Plans, specifications, and conditions of contract with Mr. J. H. Brierley, Borough Surveyor, Town Hall, Richmond, on deposit of 1*l*. 1s.

NOVEMBER 12.—**Bridlington.**—VILLA.—For erection of a villa residence on the Belvedere Cliff-parade, Bridlington. Messrs. W. S. Walker, F.R.I.B.A., & Son, architects and surveyors, 77, Lowgate, Hull.

NOVEMBER 12.—**Dublin.**—GALLERY, ETC.—For erection of a gallery and circular staircase at the National Library, Dublin. Plans and specification at the Office of Public Works, Dublin.

NOVEMBER 12.—**Hull.**—OFFICES, ETC.—For erecting dock offices, dock master's house, and offices for Customs Surveyor at the Hull Joint Dock. Plans and specification seen, and quantities from Mr. William Bell, architect, North-Eastern Railway, York.

NOVEMBER 12.—**York.**—COTTAGES.—Erection of thirty cottages in Alma-terrace, Fulford-road, York. Plans seen, and specification and quantities from Mr. F. W. Spurr, City Engineer, Guildhall, York. Deposit of 2*l*. 2s.

NOVEMBER 13.—**Woolwich.**—CONVENIENCES.—For erection of sanitary conveniences in the Royal Victoria Gardens, and fronting High-street, North Woolwich. Drawing, specification, and form of tender from Mr. J. Rush Dixon, M.Inst.C.E., Borough Engineer, Town Hall, Woolwich. Deposit of 1*l*. 1s.

NOVEMBER 14.—**Eastbourne.**—WALL.—For the construction of a coal bunker retaining wall at the electricity works. Specification and plan from the Borough Electrical Engineer, Electricity Works.

* NOVEMBER 14.—**Haileybury.**—SCHOOL.—The Committee of Haileybury College, Herts, invite tenders for New Big School, etc. See advertisement in this issue for further particulars.

NOVEMBER 14.—**Rugby.**—BLOCK.—Erection of a discharge block at Infectious Diseases Hospital, Harborough Magna. Plans, specifications, and quantities from Mr. T. W. Willard, architect, Market-place, Rugby.

* NOVEMBER 14.—**Wandsworth.**—EXTENSION OF BOILER-HOUSE.—The Wandsworth Guardians invite tenders for alteration and extension of boiler-house at Workhouse, Swaffield-road. See advertisement in this issue for further particulars.

NOVEMBER 15.—**Chartham.**—STORE.—Erection of a new store in connexion with the farm buildings and other works at the Asylum. Drawings and specifications from the architect, Mr. W. J. Jennings, 4, St. Margaret's-street, Canterbury.

NOVEMBER 18.—**Birmingham.**—SCHOOL.—Erection of a Council school in Brook-lane, Woodgate, Bartley Green. Forms of tender and quantities, on deposit of 2*l*., at the office of the architects, Messrs. Crouch, Butler, & Savage, of 39, Newhall-street, Birmingham.

NOVEMBER 21.—**Cleethorpes.**—SCHOOL.—Erection of a new Council school at Cleethorpes. Quantities and form of tender from Messrs. Scorer & Gamble, architects, Bank-street-chambers, Lincoln. Deposit of 2*l*. 2s.

NOVEMBER 21.—**Thornton-le-Fen.**—ALTERATIONS.—For alterations to the Council school at Thornton-le-Fen. Quantities and form of tender from the Secretary, 286, High-street, Lincoln. Deposit of 1*l*. 1s.

* NOVEMBER 21.—**Upper Clapton.**—BRANCH LIBRARY.—The Hackney B.C. invite tenders for the erection of a Branch Library. See advertisement in this issue for further particulars.

* NOVEMBER 25.—**Chorley Wood.**—SCHOOL.—The Herts C.C. Education Committee invite tenders for new County Council school. See advertisement in this issue for further particulars.

NOVEMBER 25.—**Newmarket.**—WATER-TOWER.—For carting, excavating for, and laying of about 5 miles of 3-in. cast-iron pipes, including fixing of valves, hydrants, etc., and the erection of brick water-tower. Plans and specifications seen, and quantities and form of tender from the engineers, Messrs. Sands & Walker, Milton-chambers, Milton-street, Nottingham. Deposit of 3*l*. 3s.

DECEMBER 1.—**Longford.**—LIBRARY.—Erection of a library and gymnasium at St. Mel's College, Longford. Plans and specifications with Mr. T. F. McNamara, architect, 192, Great Brunswick-street, Dublin.

No DATE.—**Blackburn.**—BAKERY.—Erection of new bakery in Crossefild-street, for the Grimshaw Park Co-operative Society, Ltd., Blackburn. Mr. F. E. L. Harris, architect, Co-operative Wholesale Society, Ltd., 1, Balloon-street, Manchester. 1*l*. 1s. for quantities.

No DATE.—**Elton Hall.**—HALL.—Erection of the new hall. Plans and quantities with Mr. C. F. Burton, architect, Shipping-chambers, George-street, West Hartlepool.

No DATE.—**Larkbeare.**—HOUSE, ETC.—Erection of a house and buildings at Larkbeare, near Mamhead. Plans with Messrs. E. H. Harbottle & Son, architects, County-chambers, Exeter.

ENGINEERING, IRON, AND STEEL.

NOVEMBER 6.—**Atherton.**—TRANSFORMER.—For the supply of one 250-kw. single-phase transformer. Particulars from Mr. C. T. Astbury, Resident Engineer.

NOVEMBER 6.—**Dundee.**—PILING.—For the reinforced-concrete piling and foundation work for extension of generating-station at Carolina Port, Dundee. Plans seen, and specifications at the head office of the department Dudhope Crescent-road.

NOVEMBER 8.—**Southampton.**—HEATING.—For the installation of low-pressure hot-water apparatus at Alton Council School. Plans, specification, with conditions of contract, and information from Mr. A. L. Roberts, Architect to the Education Committee, The Castle, Winchester. Deposit of 2*l*. 2s.

NOVEMBER 8.—**Swinton.**—ENGINE, ETC.—For pumping machinery, consisting of one gas-engine, duplicate well pumps, and one set of surface pumps. General condition and form of tender and specification from Mr. H. Birks, Engineer and Surveyor, Council Offices, Swinton, Yorks, on deposit of 1*l*.

ENGINEERING, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

NOVEMBER 8. — **Uxbridge.** — BRIDGE. — For taking down the existing wooden footbridge and the construction of a reinforced concrete footbridge over the River Colne at West Drayton. Plans seen, and specification, with form of tender, from the Surveyor, Mr. John Wm. Harrison, Corn Exchange, Uxbridge

NOVEMBER 9. — **Manchester.**—ECONOMISER.—For the erection at Davyhulme sewage works, Urmston, of one 96-tube fuel economiser in sections of six tubes each. Specifications from the Secretary of the Rivers Department, Town Hall, Manchester.

NOVEMBER 11. — **Forehill.** — RESERVOIR.—For the construction of a storage reservoir at Forehill. Drawings and general conditions of contract seen, and specification and quantities, on deposit of 1*l.* 1s., from Messrs. Walker & Duncan, civil engineers, 3, Golden-square, Aberdeen.

NOVEMBER 13.—**Seaton Sluice.**—RAILWAY.—The North-Eastern Railway invites tenders for the construction of railways at Monkseaton, the widening of a portion of the Avenue branch, and a new railway to Seaton Sluice. Plans, specification, and schedules of quantities at the office of the Company's Chief Engineer, Mr. Charles A. Harrison, Forth Banks, Newcastle-on-Tyne.

NOVEMBER 16. — **York.**—RAILWAYS.—Construction of about 1¼ miles of light railways. Conditions, plans, specifications, and quantities, on deposit of 5*l.*, from Mr. H. Craven, Town Clerk, Guildhall, York.

FURNITURE, PAINTING, MATERIALS, etc.

NOVEMBER 1.—**Ashton-under-Lyne.**—PAINTING.—For the painting of Lennox House, in Henrietta-street, Ashton-under-Lyne. Mr. F. J. Dixon, A.M.Inst.C.E., Water Engineer, Town Hall-chambers, Ashton-under-Lyne.

NOVEMBER 4.—**Pengam, etc.**—PAINTING.—For the painting of the joint bridges over the Rhymney River at Pengam, Bargoed, Brithdir, and Tirphil. Forms of tender and particulars from Mr. Jas. P. Jones, F.I.S.E., Council Offices, Hengoed, *via* Cardiff.

NOVEMBER 5. — **Aberaman.** — PAINTING.—The Aberaman Workmen's Cottage Building Club invites tenders for painting eighty houses at Valley-view and Cobden-street, Aberaman. Committee of the Club, Penylan Inn, Aberaman.

NOVEMBER 5. — **London.** — PAINTING, ETC.—For painting and decorating at the Leytonstone Public Library, Granleigh-road, Leytonstone, and the Central Library, High-road, Leyton. Specification, with forms of tender, from Mr. Ernest H. Essex, A.M.Inst.C.E., Engineer and Surveyor to the Council, Town Hall, Leyton.

NOVEMBER 5. — **London.** — PLUMBING. — For plumbing work at Bromley Asylum, Devon's-road, Bromley-by-Bow, London, E. Particulars from the Engineer at that Asylum. Forms of tender and specification from Mr. Walter R. Foskett, Clerk to the Board, Board's Offices, Devon's-road, Bromley-by-Bow, London, E.

NOVEMBER 16.—**Cardiff.**—FLOORING.—For the provision of terrazzo flooring at Cardiff Workhouse. Specification, with form of tender from Mr. Arthur J. Harris, Clerk, Union Offices, Queen's-chambers, Cardiff.

NOVEMBER 16. — **Halifax.** — PAINTING.—For painting sundry schools. Specifications seen, and forms of tender from Mr. J. Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax. Deposit of 5*l.*

* NOVEMBER 19.—**East Ham.**—SCHOOL FURNITURE.—The East Ham Education Committee invite tenders for supply of school furniture for Vicarage-lane Council School. See advertisement in this issue for further particulars.

ROADS, SANITARY AND WATER WORKS.

NOVEMBER 4.—**Auckland.**—STREETS.—For the making of private streets. Plans and specifications seen, and particulars from Mr. Charles Heslop, Sanitary Surveyor, 9, Craddock-street, Bishop Auckland.

NOVEMBER 4.—**Durrington.**—DRAIN.—For laying a 9-in. stoneware drain at Littlehampton-road, Durrington. Specification with the Surveyor, Mr. C. W. Leney, at Angmering

NOVEMBER 5.—**Ealing.**—ROADS.—For making-up Hasiemere-avenue and York-road. Drawings and specifications seen, and forms of tender, with quantities, from Mr. C. Jones, M.Inst.C.E., Borough Engineer, Town Hall, Ealing, on deposit of 10s. 6d.

NOVEMBER 5.—**London.**—ROADS.—For making-up South-grove, Tottenham. Plans seen, and general conditions, specifications, quantities, and forms of tender from Mr. W. H. Prescott, M.Inst.C.E., Engineer to the Council, at the Council-buildings, The Green, Tottenham. Deposit of 10s. 6d.

NOVEMBER 5. — **Wealdstone.** — GRANITE.—For supply of 800 tons of granite, broken to 2-in. gauge, and 120 tons of granite chippings. Samples to Mr. H. Walker, C.E., Surveyor, Wealdstone.

NOVEMBER 6. — **Clacton.** — FLINTS.—For the supply of 1,000 cubic yds. of flints, and 300 tons of 1½-in. granite. Specification and form of tender from Mr. D. J. Bowe, Surveyor to the Council, Town Hall, Clacton-on-Sea.

NOVEMBER 6.—**Hayling.**—TUBES.—For the laying of about 300 yds. of 2-ft. concrete tubes, together with manholes, at South Hayling. Plan and specification with Mr. W. L. Hibberd, the Surveyor of the Council, West-street, Havant.

NOVEMBER 9. — **Cockermouth.**—SEWAGE.—For works of sewerage at Belle Vue, Papcastle. Particulars from Mr. J. B. Wilson, A.M.Inst.C.E., Grecian Villa, Cockermouth.

NOVEMBER 9.—**Colton.**—SEWAGE.—For the construction of manholes, etc., at Colton. Particulars from Mr. H. C. Wood, Sanitary Surveyor, Tadcaster.

NOVEMBER 9.—**Hastings.**—STONE.—For supply of 1,200 yds of best unbroken blue stone. Forms of tender from the District Surveyor, Mr. D. Paine, Stonelynk Farm, Fairlight, Hastings.

NOVEMBER 11.—**London.**—PAVING.—For the making-up and paving of that part of Southcroft-road, Streatham, which lies between Mitcham-lane and Nos 15 and 16 (inclusive), Southcroft-road, Wandsworth. Specification and drawings seen, and forms of tender from the Borough Engineer, Mr. P. Dodd, M.Inst.C.E., at the office of the New Streets Department, No. 56, East-hill, Wandsworth, S.W. Deposit of 5*l.* 5s.

NOVEMBER 19. — **Belfast.** — SEWAGE.—For the construction of an outlet sewer. Drawings, specification, and tender forms from the City Surveyor, on deposit of 2*l.* 2s.

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
•BUILDING MATERIAL—On the Site	Chas. Sparrow & Son	Nov. 5
•BUILDING MATERIAL—On the Site	Veryard & Yates	Nov. 7
•PAINTS, COLOURS, VARNISHES, ETC., 64, ST. JOHN-ST. WEST, E.C.—On the Prems.	Fryett, White, & Co.	Nov. 7
•PLANT, STOCK, MACHINERY, ETC.—On the Premises	C. D. Levy	Nov. 12
•FREEHOLD BUILDING ESTATE, WALLINGTON—At the Mart	Debenham, Tewson, Richardson, & Co.	Nov. 19
•FREEHOLD LAND, CHISWICK—At the Mart	Tyser, Greenwood, & Co.	Nov. 19
•MASONS' & JOINERS' MATERIALS, CHEYNE HOUSE, CHELSEA—On the Premises	Tyler & Co.	Nov. 19
•BUILDER'S PREMISES, BATTERSEA—At the Mart	Douglas Young & Co.	Nov. 20
•FREEHOLD BUILDING SITE, NOTTING HILL GATE—At the Mart	Horne & Co.	Dec. 10

LONDON COUNCILS—*continued from page 524.*

Engineer, amounting to 270*l.*, 350*l.*, and 1,200*l.*, have been approved for improvement works in West Ham-lane and Church-street, and making up Densham-road respectively. Plans have been passed for Messrs. C. Watkins and E. Bothwell for alterations and additions to the Y.M.C.A. buildings in Woodgrange-road, Forest Gate; also for Mr. R. C. T. Gordon for alterations to Nos. 348 and 350, Green-street, Upton Park. The following plans have been lodged:—Mr. F. W. Waggett, conversion of hall, Pashet-road, Upton Manor, into cinematograph theatre; Messrs. J. & P. J. Groom, cinematograph theatre, Forest-lane, Forest Gate.

Wood Green.—The Surveyor has been authorised to confer with a firm of consulting engineers with respect to the preparation of a scheme for extending the heating apparatus, hot-water supply, and electric lighting plant in connexion with the proposed additions to the slipper-baths. A Committee has been appointed for the purpose of considering all matters required to be done in connexion with the Council's application to the Local Government Board for the preparation of a town-planning scheme. Tenders are to be invited for laying sewers in three roads at an estimated cost of 885*l.* A plan has been passed for Mr. H. Jones for the erection of six houses in Clifton-road; as has also a plan submitted by Mr. J. Farrer on behalf of Mr. J. Ives, for seventeen houses in Woodside-road.

Woolwich.—For foundation steelwork required in connexion with extensions now in progress at the Globe-lane Electricity Works the tender of Messrs. Dorman & Long, Ltd., Middlesbrough, has been accepted at 257*l.* 5s. 7d. The following plans have been passed:—Mr. F. H. Buen, 12, Woodlands-avenue, Wanstead, on behalf of Mr. T. H. H. Hutchings, six houses, Blunts-road, Eltham; Messrs. Lovegrove & Papworth, 374-378, Old-street, E.C., on behalf of West's Brewery Company, Ltd., rebuilding Three Crowns public-house, High-street, North Woolwich, E.; Mr. L. A. Stanton, 110, High-road, Lee, S.E., on behalf of Mr. F. Hare, five houses, Blunts-road, Eltham.

PATENTS.

APPLICATIONS PUBLISHED.*

17,230 of 1911.—Douglas Harold Brownfield and Frederick Beech: Composition for use in making fire-resisting bricks, quarries, tiles for fireplaces, and the like.

21,516 of 1911.—Alexander Ernst Bunge: Rubbish burning apparatus combined with kitchen ranges.

22,951 of 1911.—Ernest Alfred Ward: Appliances for cleaning or removing obstructions from drain and other pipes, flues, and the like.

23,694 of 1911.—Henry Frank Berry: Apparatus for heating, drying, and otherwise treating stone and other materials for use on roads and like surfaces.

25,219 of 1911.—Maria Giese (*née* Michenfelder): Process for the manufacture of hollow floors and ceilings.

25,273 of 1911.—James Damrel Prior: Domestic firegrates.

25,970 of 1911.—Mark Heaton Robinson: Method of constructing piled wharves, piers, and the like, and apparatus therefor.

26,170 of 1911.—Heinrich Wegmann: Lock for doors and the like.

27,830 of 1911.—Edward Frederick Stimson: Stoves.

28,649 of 1911.—Fred Tom Altham Riley: Domestic firegrates.

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

5,380 of 1912.—Arthur Reginald Groome: Weather excluders for doors, casements, and the like.

6,201 of 1912.—The Trussed Concrete Steel Company (Julius Kahn): Ferro-concrete construction for floors and the like.

8,297 of 1912.—Charles Taylor (Birmingham), Ltd., and William Kennedy: Attachment of "stirrup" or the like to the carrier for reinforcing concrete.

9,809 of 1912.—John Dougan: Ventilating frieze for blinds.

11,007 of 1912.—James Johnstone Fraser: Manufacture of articles wholly or partly of artificial stone or marble, and a composition therefor.

12,596 of 1912.—Joseph De Mars and Anthony James Walker: Sash-lock and anti-rattler.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

October 10.—By KNIGHT, FRANK, & RUTLEY

Box, Wilts.—Part of Ashley Manor Estate, 383 a. 0 r. 37 p., f.	£9,268
F.g. rents 12*l.* 12s.	278

October 21.—By CROWE.

Knockholt, Kent.—The Firs and 5 a. 3 r. 18 p., f.	1,060

By S. WALKER & SON.

Clapham.—Park-cres., f.g. rents 20*l.*, reversion in 37 yrs.	410
Fulham.—Broughton-rd., f.g. rents 22*l.* 10s., reversion in 69 yrs.	380
Wandsworth.—Cromford-rd., f.g. rents 52*l.*, reversion in 71 yrs.	1,097

By WARD & CO.

Manor Park.—Ruskin-av., f.g. rents 24*l.* 10s., reversion in 84 yrs.	440
Forest Gate.—Trumpington-rd., f.g. rents 27*l.*, reversion in 73 yrs.	462
Clapton.—Rus more-rd., f.g. rents 34*l.* 10s., reversion in 76 yrs.	840
Oxford-street.—Newman's-yd., factory premises, u.t. 14 yrs., g.r. 27*l.*, p.	840

October 22.—By DRIVER, JONAS, & Co.

Shere, Surrey.—Two enclosures, 3 a. 1 r. 39 p., f.	£330
Building site, 1 a. 0 r. 36 p., f.	185
Two cottages and 2 r. 31 p., f.	190

By THOMAS, PEYER, & MILES.

Chatham, Kent.—Lion Brewery, with forty-seven tied houses, f. and l.	75,000
East Malling, Kent.—Rising Sun b.h., f., y.r. 25l.	1,600
Snodhurst, Kent.—Hook and Hatchett p.h., f., y.r. 40l.	2,100
Queenborough, Kent.—Hope Inn and Castle Inn p.hs., f., y.r. 45l.	3,400
Mark Cross, Sussex.—Mark Cross Inn, lease for 13 yrs. at 25l., y.r. 50l.	575
Maxton, Kent.—Diamond Brewery, f.	2,000
Hare and Hounds b.h., y.r. 16l.	850
Buckland, Kent.—Plough p.h., f., y.r. 24l.	1,100
Ewell, Kent.—Fox Inn b.h., f., y.r. 18l.	900
Ewell Minnis, Kent.—Newcastle Inn p.h., f., y.r. 15l.	625
Dover, Kent.—Elizabeth-st., Kent Arms p.h., lease for 23 yrs. at 6l., y.r. 30l.	500
Camberwell.—Southampton-st., Two Brewers, b.h., f., y.r. 50l.	2,250
Brewer's Arms b.h. and shop adjoining, lease for 5 yrs. at 65l., r. 7·l.	460
Camberwell New-rd., Red Lion b.h., lease for 18 yrs. at 32l., y.r. 50l.	1,020
Walworth.—Orb-st., Lord Nelson b.h., lease for 5 yrs., at 40l., y.r. 35l.	1,150
Dulwich.—Crystal Palace-rd., Free Trader (off-licence), lease for 16 yrs. at 50l., y.r. 45l.	460
Rotherhithe.—Rotherhithe-st., White Horse p.h., lease for 2 yrs. at 50l., y.r. 40l.	100
Kingsland.—Laburnum-st., Globe b.h., lease for 15 yrs. at 50l., y.r. 40l.	860

October 23.—By BISLEY & SONS.

Rotherhithe.—8 and 10, Elgar-st., f., w.r. 41l. 12s.	200
Bermondsey.—5 and 6, Gibbons-rents, f., w.r. 33l. 1s.	170

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.

	£ s. d.
Best Stocks	1 14 0
Picked Stocks for Facings	2 10 0

Per 1000, Delivered at Railway Depôt.

	£ s. d.		£ s. d.
Flettons	1 13 0	Best Blue Pressed Staffordshire	3 15 0
Best Fareham Red	3 12 0	Do. Bullnose	4 0 0
Best Red Pressed Ruabon Facing	5 0 0	Best Stourbridge Fire Bricks	4 0 0

GLAZED BRICKS—

Best White, Ivory, and Salt Glzd. Str'tch'rs	12 7 6	Double Headers	14 17 6
		One Side and two Ends	18 17 6
Headers	11 17 6	Two Sides and one End	19 17 6
Quoins, Bullnose, and 4½ in. Flats	15 17 6	Splays & Squints	17 7 6
D'ble Stretchers	17 17 6		

Second Quality £1 10s. per 1000 less than best.

Thames and Pit Sand	6 9	per yard, delivered.
Thames Ballast	5 6	" "
Best Portland Cement	36 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	13s. 6d. per yard delivered.
Stourbridge Fireclay in sacks	27s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.

	s. d.
BATH STONE—delivered on road waggons, Paddington Depôt	1 7½
Do. do. delivered on road waggons, Nine Elms Depôt	1 9
PORTLAND STONE (20 ft. average)—	
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 3
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 4½

STONE (*Continued*).

Per Ft. Cube, delivered at Railway Depôt.

	s. d.		s. d.
Ancaster in blocks	1 10	Closeburn Red Freestone	2 0
Beer in blocks	1 6	Red Mansfield Freestone	2 4
Greenshill in blocks	1 10	Talacre & Gwespyr Stone	2 4
Darley Dale in blocks	2 4		
Red Corsehill in blocks	2 3		

YORK STONE—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt. s. d.

Scappled random blocks	2 10

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3
6 in. rubbed two sides ditto, ditto	2 6
3 in. sawn two sides slabs (random sizes)	0 11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7
1¼ in. to 2 in. ditto, ditto	0 6

HARD YORK—

Per Ft. Cube, Delivered at Railway Depôt.

Scappled random blocks	3 0

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landing to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto	3 0
3 in. sawn two sides slabs (random sizes)	1 2
2 in. self-faced random flags	0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£ s. d.	In. In.	£ s. d.
20×10 best blue Bangor	13 2 6	20×10 best Eur'ka unfading Bangor	15 17 6
20×12 ditto	13 17 6	20×12 ditto	18 7 6
20×10 1st quality ditto	13 0 0	18×10 ditto	13 5 0
20×12 ditto	13 15 0	18×8 ditto	10 5 0
16×8 ditto	7 5 0	20×10 permanent green	11 12 6
22×10 best blue Portmadoc	12 12 6	18×10 ditto	9 12 6
16×8 ditto	6 12 6	16×8 ditto	6 12 6

TILES.

At Railway Depôt.

	s. d.		s. d.
Best plain red roofing (per 1000)	42 0	Best "Hartshill" brand, plain sand-faced (per 1000)	45 0
Hip and Valley (per doz.)	3 7	Do. pressed (per 1000)	42 6
Best Broseley (per 1000)	50 0	Do. Ornamental (per 1000)	47 6
Do. Ornamental (per 1000)	52 6	Hip (per doz.)	4 0
Hip and Valley (per doz.)	4 0	Valley (per doz.)	3 6
Best Ruabon red, brown, or brindled (Edw'ds) (per 1000)	57 6	Staffords. (Hanley) Reds or Brindled (per 1000)	42 6
Do. Ornamental (per 1000)	60 0	Hand-made sand-faced (per 1000)	45 0
Hip (per doz.)	4 0	Hip (per doz.)	4 0
Valley (per doz.)	3 0	Valley (per doz.)	3 6

WOOD.

BUILDING WOOD. At per standard.

	£ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	14 0 0	15 10 0
Deals: best 3 by 9	13 10 0	14 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0	12 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	" "
2 in. by in. and 2 in. by 6 in.	9 10 0	10 10 0
2 in. by 4½ in. and 2 in. by 5 in.	9 0 0	10 0 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"

Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft.	5 10 0
	5 0 0	
Seconds	4 10 0	5 0 0
Small timber (8 in. to 10 in.)	3 17 6	4 0 0
Small timber (6 in. to 8 in.)	3 5 0	3 10 0
Swedish balks	2 12 6	3 0 0
Pitch-pine timber (30 ft. average)	5 5 0	6 0 0

JOINERS' WOOD. At per standard.

White Sea: first yellow deals, 3 in. by 11 in.	24 10 0	25 10 0
3 in. by 9 in.	22 10 0	23 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 0 0
Second yellow deals, 3in. by 11in.	19 0 0	20 0 0
" " 3 in. by 9 in.	18 0 0	19 10 0
Battens, 2½ in. and 3in. by 7 in.	14 0 0	15 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	14 0 0	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 10 0	22 10 0
Do. 3 in. by 9 in.	18 10 0	19 10 0
Battens	14 0 0	15 0 0
Second yellow deals, 3 in. by 11 in	16 10 0	17 10 0
Do. 3 in. by 9 in.	15 0 0	16 0 0
Battens	11 10 0	12 10 0
Third yellow deals, 3in. by 11 in.	13 10 0	14 10 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 10 0	11 0 0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	15 0 0	16 0 0
" " 3 in. by 9 in.	14 0 0	14 10 0
Battens	11 10 0	12 10 0
Second white deals, 3in. by 11in.	14 0 0	15 0 0
" " 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 10 0	11 0 0
Pitch-pine: deals	19 0 0	21 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	48 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Oddments	28 0 0	"
Kauri Pine—Planks per ft. cube.	0 4 6	0 6 0

WOOD (*Continued*).

JOINERS' WOOD (*Continued*)—	£ s. d.	£ s. d.
Danzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	0 3 9
Small " "	0 2 6	0 2 6
Wainscot Oak Logs, per ft. cube	0 6 6	0 8 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 10	0 1 0
¼ in. do. do.	0 0 8½	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 10	0 1 1
Selected, Figury, per ft. super. as inch	0 1 6	0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	0 1 0
Teak, per load	18 0 0	22 0 0
American Whitewood planks, per ft. cube	0 5 0	0 6 0

Prepared Flooring, etc.— Per square.

1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
1 in. by 7 in. " "	0 14 0	0 18 6
¾ in. by 7 in. white " "	0 10 0	0 11 0
1 in. by 7 in. " "	0 12 9	0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	8 10 0	9 10 0
Compound Girders, ordinary sections	10 0 0	11 0 0
Steel Compound Stanchions	11 10 0	12 10 0
Angles, Tees, and Channels, ordinary sections	10 0 0	11 0 0
Flitch Plates	10 0 0	11 0 0
Cast Iron Columns & Stanchions, including ordinary patterns	8 0 0	8 10 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	9 0 0	9 10 0
Staffordshire Crown Bars, good merchant quality	9 5 0	9 15 0
Staffordshire "Marked Bars"	11 0 0	—
Mild Steel Bars	9 5 0	9 15 0
Hoop Iron, basis price	10 0 0	—
" " Galvanised	17 10 0	—

(*And upwards, according to size and gauge.)

Sheet Iron Black— Ordinary sizes to 20 g.	10 5 0	—
" " 24 g.	11 5 0	—
" " 26 g.	12 15 0	—
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 10 0	—
Ordinary sizes to 22 g. and 24 g.	16 0 0	—
" " 26 g.	17 0 0	—
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	18 10 0	—
" " 22 g. and 24 g.	19 0 0	—
" " 26 g.	20 10 0	—
Galvanised Corrugated Sheets— Ordinary sizes, 6ft. to 8ft. 20 g.	15 0 0	—
" " 22 g. and 24 g.	15 5 0	—
" " 26 g.	16 15 0	—
Best Soft Steel Sheets, 5 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 10 0	—
Best Soft Steel Sheets, 2 g. & 24 g.	13 10 0	—
" " 26 g.	15 10 0	—
Cut Nails, 3 in. to 6 in.	11 0 0	11 10 0

(Under 3 in., usual trade extras.)

LEAD, &c.

Delivered in London.

	£ s. d.	
LEAD—Sheet, English, 4lb. and up	23 5 0	—
Pipe in coils	23 15 0	—
Soil pipe	26 15 0	—
Compo pipe	26 15 0	—
ZINC—Sheet—	In casks of 10 cwt.	
Vieille Montagne	33 15 0	—
Silesian	33 10 0	—

Zinc, in bundles, 1s. per cwt. extra.

COPPER— Strong Sheet	per lb.	0 1 1	—
Thin	"	0 1 2	—
Copper nails	"	0 1 0	—
Copper wire	"	0 1 0	—
BRASS— Strong Sheet	"	0 1 0	—
Thin	"	0 1 1	—
TIN—English Ingots	"	0 2 3	—
SOLDER—Plumbers'	"	0 0 11	—
Tinmen's	"	0 1 2½	—
Blowpipe	"	0 1 4½	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

15 oz. thirds	2½d.	26 oz. fourths	4d.
" fourths	2d.	32 oz. thirds	5½d.
21 oz. thirds	3½d.	" fourths	4½d.
" fourths	3d.	Fluted Sheet, 15 oz.	3d.
26 oz. thirds	4½d.	" 21 oz.	4d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

¼ Rolled plate	2½d.
⅜ Rough rolled and rough cast plate	2½d.
½ Rough rolled and rough cast plate	3d.
Figured Rolled, Oxford Rolled, Oceanic, Arctic Muffled, and Rolled Cathedral, white	3½d.
Ditto, tinted	5d.

* Not less than two crates.

OILS, &c.		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 2 9
" " " in barrels	"	0 2 10
" " " in drums	"	0 2 11
Boiled " in barrels	"	0 2 11
" " " in drums	"	0 3 2
Turpentine in barrels	"	0 2 7
" in drums	"	0 2 9
Genuine Ground English White Lead,	per ton	31 0 0
Red Lead, Dry	"	27 0 0
Best Linseed Oil Putty	per cwt.	0 10 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 16 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TO CORRESPONDENTS.

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N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 6 p.m. on *Wednesday*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ANGLESEY.—For erection of the new Council school at Menai Bridge, for the Anglesey County Education Authority:—
R. & J. Williams, Bangor* £4,731

KEIGHLEY.—For erection of a bakery in Greengate-road, for Keighley Industrial Co-operative Society, Ltd. Messrs. J. Haggas & Son, architects, Keighley. Quantities by architects:—
Mason: E. Turner, Keighley* .....
Joiners: Keighley Industrial Co-operative Society, Keighley* .....
Slater: W. Thornton, Bingley* .....
Plasterer: J. Boot, Keighley* .....
Plumber: F. Lodge, Keighley* £2,100
Iron and Steel: Redpath, Brown, & Co., Manchester, etc.* .....
Reinforced-Floor—Indented Bar System: T. Cordingley & Sons, Bradford* .....

KENDAL.—For house in Old Memorial Hospital Grounds, Kendal. Mr. John Stalker, architect, 57, Highgate, Kendal:—
Builders, etc.: J. Hine & Son, Lowther-street, Kendal (six tenders)* £196 0 0
Joiner, etc.: J. Allen, Wildman-street, Kendal (five tenders)* 126 15 0
Plasterer, etc.: R. Anderson, Queen's-road (three tenders)* 19 19 6
Plumbers, etc.: W. Jackson & Co., Lowther-street, Kendal (four tenders)* 57 0 0
Painter, etc.: T. Robinson, Kent-place, Kendal (six tenders)* 16 17 0

KINETON (Warwick).—For alterations and additions to Diana Lodge, Kineton. Mr. C. M. C. Armstrong, architect, Warwick:—

T. Fleming	£295	J. S. Kimberley, Banbury*	£208
J. G. Fincher & Co.	275		

LONDON.—For additional room, etc., Guardians' Offices, Poplar, 45, Upper North-street, for Poplar Guardians. Messrs. J. & W. Clarkson, architects, 136, High-street, Poplar, E.:—
Griggs & Son, Millwal.* £320

LONDON.—For enlarging the Brixton-hill Industrial School, for the London County Council:—
Structural Work.

Bovis, Ltd.	£1,648	Lapthorne & Co., Ltd.	£1,208
H. H. Hollingsworth	1,632	W. Bailey	999
Pasterfield & English	1,598	Triggs & Co.	979
W. Downs	1,563	T. W. Heath & Son	915
Holliday & Greenwood, Ltd.	1,530	W. V. Goad	895
		H. Bragg & Sons, Ltd	792

LONDON.—For the heating work at the Mantua-street School, Battersea, for the London County Council:—

Wright Bros	£1,395	G. & E. Bradley	£915
Palowkar & Sons	1,170	J. Grundy, Ltd.	897
Brightside Foundry & Engineering Co., Ltd.	1,083	J. & F. May	895
		J. C. Christie	889
J. Boyd & Sons	1,068	J. Yetton & Co., Ltd., 4, Carr-street, Limehouse*	885
G. Davis	1,025		
W. G. Cannon & Sons, Ltd.	980		

LONDON.—For iron staircase at the Brixton-hill Industrial School, for the London County Council:—

Hayward Bros. & Eckstein, Ltd.	£220 0	Peirson & Co.	£156 0
Wilmer & Sons	167 0	F. A. Norris & Co.	124 10

RAUNDS.—For erection of a new public elementary school, for the Northamptonshire County Council Education Committee. Messrs. Blackwell & Riddey, architects, Kettering. Quantities by Messrs. Blackwell & Riddey:—

T. Dickman & Sons	£7,168 0	Beardsmore & West	£6,280 0
C. R. Pettitt	6,669 0	Hackaley Bros.	6,189 0
Smith, Edmunds, & Co.	6,600 0	W. Packwood	6,173 0
Smith & Bunning	6,479 0	B. Marriott	6,167 0
Smith & Son	6,347 7	J. G. Pulien & Sons, Northampton*	5,921 13

TOTTENHAM.—For the construction of a new station at Tottenham. Mr. J. Dixon utler, F.R.I.B.A., Surveyor to the Metropolitan Police District, New Scotland-yard, S.W. Quantities by Messrs. Thurgood, Son, & Chidgey, 2, Adelphi-terrace, Strand, W.C.:—

Knight & Son	£14,239	C. Ansell	£13,100
Stapleton & Sons	13,814	Roome & Co.	13,100
Hall, Bedall, & Co.	13,707	W. Lawrence	13,094
Goodall & Son	13,636	A. E. Symes	13,088
C. Wall & Co.	13,608	Dove Bros.	13,073
Perry & Co	13,400	A. Monk	13,050
Pattinson & Sons	13,364	Grover & Son	12,996
Sabey & Son	13,277	Patman & Fotheringham	12,843
Godson & Sons	13,250	G. W. Rowley	12,734
Fairhead & Son	13,220		
Willmott & Sons	13,200		

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